Lecture “Introduction”
(Tuesday; August 18, 2020)

“Theoria cum praxi”

Berlin Academy of Science
(Leibniz 1700)

Available on Internet for free;
Check Amazon.com for prices.
EE 443/CS 543 Introduction to Optical Fiber Communications
Fall 2020

Course Description (3 Units; 3 hours lecture)

Description. Principles of light wave propagation, propagation in optical fiber, fiber characteristics, O/E and E/O conversions, coupling, WDM, modulation techniques for efficient transmission, and system design.

Prerequisite: EE 430 Electromagnetic Fields, or consent of the instructor


EE443 Class Website: The EE443 Website is found at:

http://web.sonoma.edu/esee/courses/ee443/
Lectures given remotely using Zoom:
Before each lecture and “office hour” I will send out an e-mail invitation with the link to click on to enter the session. Using the talk capability you will be able to ask questions or make comments during the session.

“Take-at-Home” Homework and Exam submittals:
Each homework assignment & examination will be e-mailed to you (available also on the Web page). Fill out the homework or examination & return it to instructor by e-mail. You can scan it, or photograph it and attach it to your e-mail.

I will print them out, grade them with comments, and send back to each of you individually.
Ways to contact the instructor:

1. Attend class lectures on Tuesdays and Thursdays and use the talk back to ask questions (uses Zoom). Either during the lecture or at the end of the lecture period.

2. Attend “office hour” sessions to ask questions. (Next slide)

3. Use e-mail to contact instructor at dbe@sonic.net (is the best and fastest way to reach me) but you can also use estreich@sonoma.edu to reach me. You can directly ask questions or require a special Zoom session to talk (I’m very flexible on time).
Proposed “Remote” Office Hours For EE 443/CS 543

Proposed Office Hours: Tuesday from 12:00 Noon to 1:00 PM and Thursday from 1:45 to 2:30 PM. And immediately after class sessions.
EE 443/CS 543 Introduction to Optical Fiber Communications
Fall 2020

Course Grading:

<table>
<thead>
<tr>
<th>Homework assignments (10 to 11 assignments)</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>20%</td>
</tr>
<tr>
<td>Final examination</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Homework** will be assigned approximately weekly.  
(New: Late homework marked down 10% for first day late and then 15% per day late after that – no credit after 7 days)

**Examinations:** One midterm and final examination

**Zoom attendance** – Strongly encouraged – I want questions during lectures.  
I also encourage students to use my office hours!

**Reading Assignments** – Reading assignments as listed on syllabus or assigned in class.
# EE 443/CS 543 Introduction to Optical Fiber Communications  
**Fall 2020**

## Spring 2020 Class Lecture and Exam Schedule:

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 18</td>
<td>Tues</td>
<td>Introduction to EE 443: Preliminaries, course content and goals of EE443; operating rules for EE443; begin introduction to optical fiber communications</td>
<td>Introduction Lecture And Lecture 1</td>
</tr>
<tr>
<td>2</td>
<td>Aug 20</td>
<td>Thurs</td>
<td>Telecommunication networks; LAN, MAN and WAN; long-haul OFC; MUX and DMUX; TDM and WDM multiplexing; OADM and OXC components in OFC</td>
<td>Lecture 1 and Lecture 2</td>
</tr>
<tr>
<td>3</td>
<td>Aug 25</td>
<td>Tues</td>
<td>Network topologies; circuit switching versus packet switching; broadband networks; PON applications</td>
<td>Lecture 2 and begin Lecture 3</td>
</tr>
<tr>
<td>4</td>
<td>Aug 27</td>
<td>Thurs</td>
<td>Physical construction of optical fibers and OF parameters; attenuation of fiber and it calculation; Review of classical optics</td>
<td>Lecture 3</td>
</tr>
<tr>
<td>5</td>
<td>Sept 1</td>
<td>Tues</td>
<td>Ray optics and wave optics; scattering, reflection, refraction (Snell’s law), interference, diffraction, critical angle, Huygen’s principle and polarization</td>
<td>Lecture 3 &amp; Review of Diffraction</td>
</tr>
<tr>
<td>6</td>
<td>Sept 3</td>
<td>Thurs</td>
<td>Optical fiber basics: Constructing OF, Kao’s contribution to OF, Waves on transmission line (group velocity and phase velocity) MMF and SMF fibers</td>
<td>Lecture 4</td>
</tr>
</tbody>
</table>

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**Midterm is October 15, 2020; Final Exam is December 8, 2020.**

See syllabus for complete schedule.


Grading:

94 to 100 is an A
88 to 93 is an A-

84 to 87 is a B+
80 to 83 is a B

76 to 79 is a B-
70 to 75 is a C+

62 to 69 is a C
56 to 61 is a C-

51 to 55 is a D+
42 to 50 is a D

36 to 41 is a D-
and
0 to 35 is an F

However, I do from sometimes make allowances based upon the difficulty of the examinations and class distributions.
Textbook availability and price for Senior, 3\textsuperscript{rd} edition.

As of August 13, 2020; the Amazon.com price was

1. **New** hardcopy at $58.81 + shipping & tax  
   (Using Amazon.com through Book Depository US)
2. **Used** hardcopy available from other sellers on-line

And Senior (3\textsuperscript{rd} ed.) is also available in its entirety on the Internet without charge at

Questions regarding EE 443/CS 543 of Fall 2020

1. Do these Office Hours work for you?

   We can change them to best serve you.
   Use survey?

https://www.credit.com/blog/2013/03/the-11-most-commonly-asked-credit-questions-65299/