ELEC 526 – Advanced Optical Systems

Term - FALL 2014 (201409)

Instructor: Dr. Thomas Darcie
Phone: 721-8686
E-mail: tdarcie@uvic.ca

Office Hours: Days: Anytime
Time: N/A
Location: EOW 443

Lectures: A-Section(s): A01 / CRN 11249
Days: M, R
Time: 11:30-12:50
Location: ECS 130

Required Text: Title: Fiber-Optic Communication Systems (4th Ed)
Author: Govind P. Agrawal
Publisher: Wiley
Year: 2010

Optional Text: Title: none
Author: 
Publisher: 
Year: 

References:

Assessment: Assignments: 10%
Design Challenge 30%
Research Challenge 20%
Final 40%

Assessment: Due dates for assignments:
See course schedule (subject to change)
The final grade obtained from the above marking scheme will be based on the following percentage-to-grade point conversion:

<table>
<thead>
<tr>
<th>Passing Grades</th>
<th>Grade Point Value</th>
<th>Percentage for Instructor Use Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>9</td>
<td>90 – 100</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>85 – 89</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>80 – 84</td>
</tr>
<tr>
<td>A</td>
<td>6</td>
<td>77 – 79</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>73 – 76</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>70 – 72</td>
</tr>
<tr>
<td>A-</td>
<td>3</td>
<td>65 – 69</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>60 – 64</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>50 – 59</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Failing Grades</th>
<th>Grade Point Value</th>
<th>Percentage for Instructor Use Only</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>0</td>
<td>0 – 49</td>
<td>Fail, *Conditional supplemental exam. (For undergraduate courses only)</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>0 – 49</td>
<td>Fail, no supplemental.</td>
</tr>
<tr>
<td>N</td>
<td>0</td>
<td>0 – 49</td>
<td>Did not write examination, Lab or otherwise complete course requirements by the end of term or session; no supplemental exam.</td>
</tr>
</tbody>
</table>

*Assignment of E grade will be at the discretion of the Course Instructor.*

The rules for supplemental examinations are found on page 80 of the current 2014/15 Undergraduate Calendar.

<table>
<thead>
<tr>
<th>Term in which E Grade Was Obtained</th>
<th>Application Deadline for Supplemental Exam</th>
<th>Supplemental Exam Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>First term of Winter Session (Sept – Dec)</td>
<td>February 28 in the following term</td>
<td>First week of following May</td>
</tr>
<tr>
<td>Second term of Winter Session (Jan – Apr)</td>
<td>June 30 in the following term</td>
<td>First week of following September</td>
</tr>
<tr>
<td>Summer Session (May – Aug)</td>
<td>October 31 in the following term</td>
<td>First week of following January</td>
</tr>
</tbody>
</table>

Deferred exams will normally be written at the start of the student's next academic term; i.e., approximately 4 months following the deferral of the exam.
Course Description

1. Course Objectives
   TBD
2. Learning Outcomes
   TBD
3. Syllabus
   This course explores the basics principles and technologies involved in modern optical communications systems.

   - Introduction:

   - Component Fundamentals:
     - optical fiber
     - transmitters and modulation techniques
     - receivers and detection/demodulation techniques
     - passive and wavelength-division multiplexing (WDM) components
     - optical amplification

   - Applications:
     - Wide-area transmission systems
       - end-to-end telecommunications networks
       - digital coarse/dense WDM
       - dispersion limits and pulse spreading
       - nonlinear optical effects
       - dispersion and nonlinearity management
     - Access
       - architectural context
       - passive optical networks
       - hybrid fiber coax networks

   - Design Challenge:
     - Students will work in teams to design a specified modern high-speed communication network, exploring the performance issues and trade-offs between number of channels, channel bit-rate, and architectural choices.

   - Research Challenge:
     Students will dissect and analyze a research paper from the leading industry conference (Optical Fiber Communications), describing the motivation, breakthrough, significance, and underlying principles to the class.

Note to Students:
Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the ECE Chair by email or the ECE Chair's Secretary eceasst@uvic.ca to set up an appointment.

Accommodation of Religious Observance
See http://web.uvic.ca/calendar2014/GI/GUPo.html

Policy on Inclusivity and Diversity
See http://web.uvic.ca/calendar2014/GI/GUPo.html

Standards of Professional Behaviour
You are advised to read the Faculty of Engineering document Standards for Professional Behaviour at http://www.uvic.ca/engineering/current/undergrad/index.php#section0-25 which contains important information regarding conduct in courses, labs, and in the general use of facilities.

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult http://web.uvic.ca/calendar2014/FACS/UnIn/UARE/PoAcI.html for the UVic policy on academic integrity.