Texas A&M University  
Departmental Request for a New Course  
Undergraduate • Graduate • Professional  
• Submit original form and attach a course syllabus. •

1. This request is submitted by the Department of  
   Electrical and Computer Engineering

2. Course prefix, number and complete title of course:  
   ECEN 600  Experimental Optics

3. Course description (not to exceed 50 words):  
   Experimental Optics. (3-2). Credit 4. Hardware, electronic interfaces, and experimental  
   techniques for optics including optical mechanics, component mounting techniques, passive optical components, interferometers and  
   precision alignment, basic electronics including op amps, active optical elements such as acousto-optics, servos in optics, laser intensity  
   stabilization, lock-in amplifier and frequency stabilization.

4. Prerequisite(s):  
   Approval of instructor

Cross-listed with:

Cross-listed courses require the signature of both department heads.

5. Is this a variable credit course?  
   □ Yes  
   X No  
   If yes, from ________ to ________

6. Is this a repeatable course?  
   □ Yes  
   X No  
   If yes, this course may be taken ________ times.
   Will this course be repeated within the same semester?  
   □ Yes  
   X No

7. Has this course been taught as a 489/689?  
   X Yes  
   □ No  
   If yes, how many times?  
   3
   Indicate the number of students enrolled for each academic period it was taught.  
   Fall’02-9, Fall’03-13, Spring’06-18

8. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

   M.S., M.E.N., Ph.D. in Electrical & Computer Engineering

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments.  
   Attach approval letters.

10. Prefix  
    Course #  
    Title (excluding punctuation)  
    Lect.  
    Lab  
    SCH  
    CIP and Fund Code  
    Admin. Unit  
    Acad. Year  
    FICE Code

| ECEN | 600 | EXPERIMENTAL OPTICS | 0 | 3 | 0 | 2 | 0 | 4 | 1 | 4 | 1 | 0 | 1 | 0 | 0 | 6 | 0 | 9 | 4 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 3 | 6 | 3 | 2 |

Approval recommended by:

Head of Department  
Date

Head of Department (if cross-listed course)  
Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services  
Date  
Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201.  
Curricular Services – 11/07
ECEN 600 Experimental Optics

Course Description and Prerequisites

Hardware, electronic interfaces, and experimental techniques for optics including optical mechanics, component mounting techniques, passive optical components, interferometers and precision alignment, basic electronics including op amps, active optical elements such as acousto-optics, servos in optics, laser intensity stabilization, lock-in amplifier and frequency stabilization.

Prerequisites: Instructors approval

Learning Outcomes or Course Objectives

During the course, students will learn to start from a collection of spare parts and build an opto-electronic servo system, designed to lock a narrowband optical filter to a laser. Along the way, the key concepts and experimental skills will be acquired by performing simpler optics and electronics tasks with gradually increasing complexity. Students will also demonstrate technical presentation skills by presenting a related topic to the class.

Instructor Information

Name Philip Hemmer
Telephone number 979-845-8932
Email address hemmer@ece.tamu.edu
Office hours TBD
Office location ZACH 216H

Textbook and/or Resource Material

Recommended text: Optics by Eugene Hecht, Addison Wesley Pub. Co.

Grading Policies

Grading: Three exams 20% (20 points), Lab proficiency demonstrations 20% (20 points), Laboratory notebook 20% (20 points), Project paper and presentation 20% (20 points), and Final exam 20% (20 points).

Lab proficiency demonstrations will be graded based on how well you can perform the assigned laboratory experiments, starting with only the hardware components.

Laboratory notebook will be graded based on how complete the information is including supporting material and data sheets, raw data from measurements, processed results including plots, and narrative describing the experiment and outcome.
Project paper and presentation will be graded based on how good of a review you provide for your selected topic, how logical, innovative, and feasible your proposed idea is, and how well you present your work to the class.

Your grades will be calculated on the basis of total points earned. The points can be curved based on class average and may lower the following standard.
A  90-100 (out of 100)
B  80-89 (out of 100)
C  70-79 (out of 100)
D  60-69 (out of 100)
F  59 and lower (out of 100)

Late Submissions
Late submissions of assignments will be accepted only in the case of University excused absences.

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic experimental techniques, keeping a lab book</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Optical mechanics, component mounting techniques</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Passive optical components, lenses, mirrors, etc</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Interferometers and precision alignment</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Basic electronics including op amps</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Active optical elements such as acousto optics</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Servos in optics</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Laser intensity stabilization</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Lock-in amplifiers and frequency stabilization</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Technical presentations</td>
<td></td>
</tr>
<tr>
<td>11—14</td>
<td>Demonstrate skills learned</td>
<td></td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an
accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity

For additional information please visit: http://www.tamu.edu/aggiehonor

"An Aggie does not lie, cheat, or steal, or tolerate those who do."