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

Form Instructions
1. Course request type:  □ Undergraduate  ✓ Graduate  □ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name): Department of Anthropology
3. Course prefix, number and complete title of course: ANTH 670 • Anthropology Proseminar
4. Catalog course description (not to exceed 50 words):
Course introduces the four bridging themes within the department and the faculty associated with each. Incoming graduate students will be exposed to the breadth of research being conducted by members of the anthropology faculty.
5. Prerequisite(s):
Graduate Standing and major in Anthropology
Cross-listed with: Stacked with:
Cross-listed courses require the signature of both department heads.
6. Is this a variable credit course? □ Yes  ✓ No If yes, from ________ to ________
7. Is this a repeatable course? □ Yes  ✓ No If yes, this course may be taken ________ times.
Will this course be repeated within the same semester? □ Yes  ✓ No
8. Will this course be submitted to the Core Curriculum Council? □ Yes  ✓ No
9. How will this course be graded: ✓ Grade  □ S/U  □ P/F (CLMD)
10. This course will be:
a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
M.A., M.S., or Ph.D. in Anthropology
b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.
12. ✓ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-control-basics-for-distance-education).
13. Prefix Course # Title (excluding punctuation)
ANTH 670 Anthropology Proseminar
<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>Other</th>
<th>SCH</th>
<th>CP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
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<td>0280</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

Approval recommended by:

Cynthia Warner
Department Head or Program Chair (Type Name & Sign)  Date
5-1-2015
Department Head or Program Chair (Type Name & Sign)  Date (if cross-listed course)

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8231 or sandra-williams@tamu.edu.
Curricular Services – 07/14
Anthropology Proseminar
ANTH 689-600
Fall 2015
Fridays 9:00-12:00
Anthropology 300B

Coordinator: Sharon Gursky
gursky@tamu.edu
office: Anth 316C
Office hours: W:9-11am and by appointment

The purpose of this class is to introduce new incoming graduate students to the breadth of research being conducted by members of the anthropology faculty. Too often graduate students only take classes within their sub-field, only attend lectures within their sub field, despite what the faculty see as clear connections between the research agendas between sub fields. Consequently, the anthropology department has identified four themes that bridge across the four anthropological sub fields. This course will introduce the four bridging themes and the faculty that are associated with each theme. Faculty will then give a presentation regarding their current research agenda and discuss how it relates to a bridging theme.

Prerequisites: Graduate standing and major in Anthropology

5% of the course grade will be attendance. Attendance will be taken at the start of each class period. If you arrive late for class, more than 15 minutes, you will only receive 50% attendance credit for that day. For additional details please refer to http://student-rules.tamu.edu/rule07. Make-ups will only be provided with a University Approved excuse and will be constructed by the Course Coordinator.

10% of the course grade will be active participation. Each graduate student should be prepared to ask at least one question to each faculty guest lecturer who has presented their work during class period. The question can come from the assigned readings or a question regarding the presentation. This question must not only be asked during class, but also typed and turned in to the class instructor. The question will constitute your participation grade for each class period.

Two to four peer reviewed journal articles have been assigned by each guest lecturer as reading for each week. These articles are required readings and will be discussed during each class period. 35% of the course grade will come from 10 one page constructive reviews of the weekly journal articles. These weekly reviews should be typed, single spaced, 12 point Times New Roman font, indicate the title and author of the paper, as well as the graduate student’s name. Copies of these articles will be placed on the table outside of the class instructor’s office (Room 316C) as well as a USB flashdrive containing pdfs of each article. Students can also obtain the articles from the library. A grading rubric is attached to this syllabus.

The other 50% of the course grade will involve the construction of a poster illustrating and discussing how what the student plans to study (ie. Nautical) and how it relates to each of the four bridging themes. This project is due on the last day of classes, December 9th, by the start of class. Faculty from the entire department will be invited to view these posters and their content. Format for the posters should follow American Anthropological Association guidelines.
Grading Scale
A = 90 - 100
B = 89 - 80
C = 79 - 70
D = 69 - 60
F = 59 or less

Statement and Policy on Individual Disabling Conditions
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 reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please contact Disability Services in Cain Hall B118 or call (979) 845-1637.

Aggie Honor Code
"An Aggie does not lie, cheat or steal, or tolerate those who do." Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing or reporting research. It does not include honest error or honest differences in interpretations or judgments of data. TAMU students are responsible for authenticating all work submitted to an instructor. For additional information please refer to the Honor Council Rules and Procedures on the web http://aggiehonor.tamu.edu

Diversity Statement for Course Syllabi
Respect for cultural and human biological diversity are core concepts of Anthropology. In this course, each voice in the classroom has something of value to contribute to class discussion. Please respect the different experiences, beliefs and values expressed by your fellow students and instructor, and refrain from derogatory comments about other individuals, cultures, groups, or viewpoints. The Anthropology Department supports the Texas A&M University commitment to Diversity, and welcomes individuals of all ages, backgrounds, citizenships, disabilities, education, ethnicities, family statuses, genders, gender identities, geographical locations, languages, military experience, political views, races, religions, sexual orientations, socioeconomic statuses, and work experiences (See http://diversity.tamu.edu/).
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Instructor</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 9/4</td>
<td></td>
<td>Introduction to Class</td>
<td>Dr. Vaughn Bryant</td>
</tr>
<tr>
<td>2 9/11</td>
<td></td>
<td>Dr. Darryl de Ruiter</td>
<td>Ecology and Evolution</td>
</tr>
<tr>
<td>3 9/18</td>
<td></td>
<td>Dr. Michael Alvard</td>
<td>Ecology and Evolution</td>
</tr>
<tr>
<td>4 9/25</td>
<td></td>
<td>Dr. Jeff Winking</td>
<td>Ecology and Evolution</td>
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<td>5 10/2</td>
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<td>Dr. Sharon Gursky</td>
<td>Ecology and Evolution</td>
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<tr>
<td>6 10/9</td>
<td></td>
<td>Dr. Kevin Crisman</td>
<td>Technology and Material Culture</td>
</tr>
<tr>
<td>7 10/16</td>
<td></td>
<td>Dr. Shelley Wachsmann</td>
<td>Technology and Material Culture</td>
</tr>
<tr>
<td>8 10/23</td>
<td></td>
<td>Dr. Kelly Graf</td>
<td>Dispersals, Diasporas and Migrations</td>
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<tr>
<td>9 10/30</td>
<td></td>
<td>Dr. Ted Goebel</td>
<td>Technology and Material Culture</td>
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<tr>
<td>10</td>
<td>11/6</td>
<td>Dr. Lori Wright</td>
<td>Dispersals, Diasporas and Migrations</td>
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<td>11</td>
<td>11/13</td>
<td>Dr. Tom Green</td>
<td>Dispersals, Diasporas and Migrations</td>
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<tr>
<td>12</td>
<td>11/20</td>
<td>Dr. Michael Waters</td>
<td>Dispersals, Diasporas and Migrations</td>
</tr>
<tr>
<td>13</td>
<td>11/27</td>
<td>No Classes</td>
<td>Thanksgiving Break</td>
</tr>
<tr>
<td>14</td>
<td>12/4</td>
<td>Dr. Alston Thoms</td>
<td>Food, Nutrition and Culture</td>
</tr>
<tr>
<td>15</td>
<td>12/11</td>
<td>Posters</td>
<td>Viewing by all Faculty</td>
</tr>
<tr>
<td>Rubric for Journal Article Review</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Reference</strong></td>
<td><strong>3</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
</tr>
<tr>
<td>Format is Perfect</td>
<td>Major edits needed - follow the details.</td>
<td>Major edits needed. Learn the details.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Review of Article</strong></td>
<td><strong>3</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>Major points selected and discussed.</td>
<td>Same as 3, but selects couple minor issues or no supporting example explained</td>
<td>Does not focus on major issues</td>
<td></td>
</tr>
<tr>
<td><strong>Organization of writing</strong></td>
<td><strong>3</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
</tr>
<tr>
<td>Well organized thinking that reviews the article, discusses the major points in an order that makes sense, and closes with your own thoughts.</td>
<td>Minor jumping around on points. Could be better with few minor moves.</td>
<td>Major jumping around on points made in review. Major organizational edits needed to articulate clearly.</td>
<td></td>
</tr>
<tr>
<td><strong>Your Thoughts</strong></td>
<td><strong>3</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
</tr>
<tr>
<td>Articulates your thoughts on the article in clear manner. Discusses what you learned from reading the article or ideas you might use in the future.</td>
<td>Brief mention of thoughts, but did not elaborate. No mention of learning from reading the article.</td>
<td>Does not write any of your own thoughts or ideas about what is discussed in the article.</td>
<td></td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td><strong>3</strong></td>
<td><strong>2</strong></td>
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</tr>
</tbody>
</table>
# Rubric for Journal Article Review

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<tr>
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<th>Your Score</th>
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</thead>
<tbody>
<tr>
<td><strong>Reference</strong></td>
<td>Format is Perfect</td>
<td>Minor edits needed – follow the details.</td>
<td>Major edits needed. Learn the details.</td>
<td></td>
</tr>
<tr>
<td><strong>Review of Article</strong></td>
<td>Major points selected and discussed.</td>
<td>Same as 3, but selects couple minor issues or no supporting example explained</td>
<td>Does not focus on major issues</td>
<td></td>
</tr>
<tr>
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</tr>
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<td><strong>Your Thoughts</strong></td>
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<td>Brief mention of thoughts, but did not elaborate. No mention of learning from reading the article.</td>
<td>Does not write any of your own thoughts or ideas about what is discussed in the article.</td>
<td></td>
</tr>
</tbody>
</table>

**Total Score**

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**Readings**

**Week 1:**


**Week 2:**


**Week 3:**


**Week 4:**


**Week 5:**


**Week 6:**


Crisman K, Lees W, Davis J. (2013). The western river steamboat Heroine, 1832-1838, Oklahoma USA: excavations, summary of finds, and history. The International Journal of Nautical Archaeology 42(2) 365-381.

Week 7:


Week 8:


Week 9:


Week 10:


Week 11:


Week 12:


Waters M, Stafford T. The first americans: A Review of the evidence for the late Pleistocene peopling of the Americas. 543-562.

Week 13: No Classes; University Reading Day

Week 14:


Week 15: No readings; Posters due
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:  [ ] Undergraduate [x] Graduate [ ] First Professional (MD, PhD, PharmD, DVM)
2. Request submitted by (Department or Program Name):  Department of Electrical and Computer Engineering
3. Course prefix, number and complete title of course:  ECEN 738 Power Electronics
4. Catalog course description (not to exceed 50 words): Electric power conditioning and control; characteristics of solid state power switches; analysis and experiments with AC power controllers, controlled rectifiers, DC choppers and DC-AC converters; applications to power supplies, airborne and spaceborne power systems.

5. Prerequisite(s):  Graduate classification or approval of instructor.
   Cross-listed with:  Stacked with:  ECEN 438
   Cross-listed courses require the signature of both department heads.
6. Is this a variable credit course?  [ ] Yes  [x] No  If yes, from _____ to _____
7. 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
8. Will this course be submitted to the Core Curriculum Council?  [ ] Yes  [x] No
9. How will this course be graded?  [x] Grade  [ ] S/U  [ ] P/F (CLMD)
10. This course will be:
   a. required for students enrolled in the following degree program(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., Ph.D. in ELEN or CEEN

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.
12. [x] I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls-export-controls-basics-for-distance-education).

<table>
<thead>
<tr>
<th>Course #</th>
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<tr>
<td>ECEN 738</td>
<td>POWER ELECTRONICS</td>
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<td>Lec.</td>
<td>Lab</td>
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Approval recommended by:

Jose Silva-Martinez
Department Head or Program Chair (Type Name & Sign)  Date 05/20/2015

Chair, College Review Committee  Date 6/11/15

Department Head or Program Chair (Type Name & Sign)  Date
(if cross-listed course)

Submitted to Coordinating Board by:

Associate Director, Curricular Services  Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14
Course title and number
ECEN 738 Power Electronics
Term
Fall 2016
Lecture times and location
TBD
Lecture: 3 hours   Lab: 3 hours
Credit: 4
Instructor
Prof. Robert S. Balog
Department of Electrical and Computer Engineering
205D Wisenbaker Engineering Building (WEB)
979-862-4985
rbalog@ece.tamu.edu
Office Hours
online via Piazza 24x7, in person by appointment

Course Description and Prerequisites
Electric power conditioning and control; characteristics of solid state power switches; analysis and experiments with AC power controllers, controlled rectifiers, DC choppers and DC-AC converters; applications to power supplies, airborne and spaceborne power systems. Prerequisite: Graduate classification or approval of instructor.

Textbook and/or Resource Material

Course Reserves: http://library.tamu.edu/services/course-reserves/

Lab Manual: Laboratory Manual for ECEN 738 (download from PIAZZA) (Required).

Digital Media
Piazza.com – social learning environment / discussion board available on multiple platforms via web or downloadable app. Students registered on Howdy should all have automatically received an invitation email at their email.tamu.edu mail address.

eCampus – recording and disseminating grades

MediaMatrix – disseminating recorded lecture material and problem solving sessions

Grading Policies
There will be two mid-term exams and a final exam. The exams will take place as per the schedule below, unless you are notified of a change in date and time. Reading assignments will not be made; you are expected to study the book topics as appropriate. The dates indicated for the material are approximate; some modifications will be inevitable. There may be important email communications (like a change in the test date) to the class, so it is important for you to monitor Piazza.com for the latest information.
2 Exams: 40%  | Grading Scale (out of 100):
Laboratory: 20%  | A: 90-100; B: 80-89; C: 70-79;
Homework / Quizzes / Class participation: 20%  | D: 60-69; F: 59 or lower
Final Exam: 20%  | The instructor reserves the right to adjust (curve)
100%  | the grading scale downward.

Laboratory attendance & grade is mandatory to pass the course. Graduate students taking ECEN 738 will have different problems on the exams from undergraduates taking ECEN 438.

**Attendance and Make-up Policies**

Make-ups will be granted only for university-excused absences with proper documentation. Refer to student rule 7 at http://student-rules.tamu.edu/rule07 for all policies regarding excused absences.

**Homework / Quizzes / Class Participation**

Weekly homework will be assigned. In-class quizzes will consist of a randomly selected problem from the homework set. Class participation will be based upon active participation in the Piazza online forum judged by contribution to questions asked by other students.

**Computer Access**

To use PSPICE, LabView or other software, you can either use the ECE open access lab (OAL) when not in use by a scheduled lab section.

**Learning Outcomes or Course Objectives**

The learning outcomes include the following ABET Criteria:
- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to identify, formulate, and solve engineering problems
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

**Academic Integrity**

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

For additional information please visit: [http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/)
University Regulations Student Handbook: [http://student-rules.tamu.edu](http://student-rules.tamu.edu)
Definition of Academic Misconducts: [http://student-rules.tamu.edu/rule52](http://student-rules.tamu.edu/rule52)

The handouts used in this course are copyrighted. The definition of "handouts" is all materials generated for this class, which include but are not limited to syllabi, homework assignments, in-class materials, and additional printed materials except published scientific papers for personal use. Because these materials are copyrighted, you do not have the right to make additional copies of the handouts unless the instructor of this course expressly grants permission. As commonly defined, plagiarism consists of passing off the ideas, words, writings, etc., of another as one's own. In accordance with this definition, you are committing plagiarism if you copy the work of another person without proper citation and acknowledgement, and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic offenses, for the plagiarist destroys the trust among colleagues without which research cannot be safely
communicated. **Paraphrasing** without proper citation and acknowledgement is one form of plagiarism. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty". Any forms of dishonesty including, but not limited to, cheating on any examinations and plagiarism will be handled according to the procedures outlined by the Aggie Honor System Office.

**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](http://disability.tamu.edu)

**Tentative Course Topics & Key Dates**

<table>
<thead>
<tr>
<th>Week</th>
<th>Sections</th>
<th>Topic (tentative, subject to change)</th>
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<tbody>
<tr>
<td>1.</td>
<td>1.1 to 1.5, 2.2, 2.5</td>
<td>Power Electronics – Introduction, Power Computations</td>
</tr>
<tr>
<td>2.</td>
<td>2.6 – 2.8, 4.2</td>
<td>RMS, Apparent power &amp; power factor, Rectifiers</td>
</tr>
<tr>
<td>3.</td>
<td>4.2, 4.3</td>
<td>Rectifiers, Single phase rectifiers</td>
</tr>
<tr>
<td>4.</td>
<td>4.3, 4.4</td>
<td>Single phase rectifiers, Three phase rectifiers</td>
</tr>
<tr>
<td>5.</td>
<td>4.4, 4.5</td>
<td>Three phase rectifiers, Controlled three-phase rectifiers</td>
</tr>
<tr>
<td>6.</td>
<td>6.1 to 6.2</td>
<td>DC-DC converters, Buck Converter, <strong>EXAM 1: Rectifiers</strong></td>
</tr>
<tr>
<td>7.</td>
<td>6.6, 6.5</td>
<td>Buck-Boost converter, Boost Converter</td>
</tr>
<tr>
<td>8.</td>
<td>6.7, 6.8</td>
<td>Ćuk and SEPIC Converters</td>
</tr>
<tr>
<td>9.</td>
<td>7.2</td>
<td>DC Power Supplies</td>
</tr>
<tr>
<td>10.</td>
<td>7.3, 7.4</td>
<td>Flyback and Forward Converters</td>
</tr>
<tr>
<td>11.</td>
<td>7.5, 7.6</td>
<td>Two-switch converters</td>
</tr>
<tr>
<td>12.</td>
<td>8.2, 8.3</td>
<td>DC-AC Inverters, <strong>EXAM 2: DC-DC Converters</strong></td>
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<tr>
<td>13.</td>
<td>8.4 to 8.5</td>
<td>DC-AC Inverters</td>
</tr>
<tr>
<td>14.</td>
<td>8.6 to 8.8, 8.10 to 8.12</td>
<td>DC-AC Inverters, Pulse Width Modulation</td>
</tr>
</tbody>
</table>
Note: You cannot adequately perform the experiment each week if you have not completed your prelab first. Therefore, if you do not turn in your prelab at the beginning of the lab period, you will receive a zero on your prelab for that week.

Lab Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Lab</th>
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<tbody>
<tr>
<td>1</td>
<td>No lab meeting - first week of class</td>
</tr>
<tr>
<td>2</td>
<td>Demonstration 1 – “Introduction to the Laboratory”</td>
</tr>
</tbody>
</table>
| 3    | Experiment 1 – “Basic Rectifier Circuits”  
       | Lab Report for Demonstration 1 Due |
| 4    | Experiment 2 – “AC-DC Conversion Part I: Single-Phase Conversion”  
       | Lab Report for Experiment 1 Due |
| 5    | Experiment 3 – “AC-DC Conversion Part II: Poly-Phase Conversion”  
       | Lab Report for Experiment 2 Due |
| 6    | No Lab – Exam I |
| 7    | Experiment 4 – “Models for Real Components”  
       | Lab Report for Experiment 3 Due |
| 8    | Experiment 5 – “DC-DC Conversion Part I: Buck-Derived Converters”  
       | Lab Report for Experiment 4 Due |
| 9    | Experiment 6 – “DC-DC Conversion Part II: Boost-Derived Converters”  
       | Lab Report for Experiment 5 Due |
| 10   | Experiment 7 – “DC-DC Conversion Part III: Isolated Converters”  
       | Lab Report for Experiment 6 Due |
| 11   | No Lab – Exam II study week |
| 12   | Experiment 8 – “DC-AC Conversions Part I: Voltage-Sourced Inverters”  
       | Lab Report for Experiment 7 Due |
| 13   | No Lab – Thanksgiving Holiday |
| 14   | Experiment 9 – “DC-AC Conversion Part II: Pulse Width Modulated Inverters”  
       | Lab Report for Experiment 8 Due |
| 15   | No Lab – Reading Period  
       | Lab Report for Experiment 9 Due |

Attendance in Lab is **MANDATORY**. You are responsible for attending your lab section each week of the semester. If there is some special situation, you must discuss it with your TA before the meeting of the lab section. Only university approved absences or excuses will be accepted.

A sample of how the lab will be run each week is:

1. Turn in lab report due that week.
2. Turn in the pre-lab assignment for the lab.
3. The TA will explain any pertinent details of the experiment to be performed.
4. Perform the lab.
5. After the lab, perform data analysis, compare experimentally measured data to expected data, discuss differences and possible sources of error, and prepare report.

**Laboratory Grading** –

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre lab assignment</td>
<td>30%</td>
</tr>
<tr>
<td>Laboratory report</td>
<td>70%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

If you do not turn in your prelab at the beginning of the lab session you will receive a zero on your prelab for that week.
Prelab Assignments –
For each lab hardware experiment, you will have a related simulation experiment that will be performed prior to the hardware experiment and must be turned in at the start of the lab class. In order to get the full benefit of the lab experiment, you must complete your prelab before coming to lab. If you have problems, use PIAZZA or seek help from your TA before the scheduled meeting of your lab. The prelab is an individual effort and due at the beginning of the lab session. The TA will not allow you to perform the experiment if you do not hand in a pre-lab. If you choose to come to lab without your completed pre-lab, you AND your lab partner will not be allowed to conduct the experiment until both of you have completed the pre-lab. Whomever did not turn in their pre-lab on time will receive zero credit for the pre-lab, but the team will be allowed to perform the lab, once both teammates complete the pre-lab, and be eligible for full credit on the lab portion only.

We have tried to match the concepts being studied in the course with the concepts being explored in the lab sections. However, this is rarely perfect. It is strongly suggested to finish the lab reports several days before they are due in order to have an opportunity to seek help on Piazza or from a TA if needed. In the lab experiments we have tried to include an exploration of the theoretical concepts as well as direct references to your textbook where you can find more information. Please take advantage of these resources before asking for the lab schedule to be changed.

Lab Reports –
One week after each lab experiment, you will be required to submit a written lab report. For each lab, experiment performed, the lab report should include:

1. A title page
2. A brief summary of what the procedure you performed and how it demonstrated a specific electrical engineering theory
3. Data tables with results
4. Example calculations and derivation of equations for any calculations needed in the data tables
5. High-impact graphs of data requested in the lab
6. Comments about each task for a lab, the theory you learned by doing the experiment, and any explanation of results that are more than +/- 10% of the expected value
7. Compared the results of the pre-lab to the results obtained in the experiment. Comment on any discrepancies and plausible sources of the disagreement using good engineering judgement.
8. Repeat the pre-lab simulation using component data measured in the lab.
9. A conclusion that summarizes why the experiment was performed and suggestions for further study of any theoretical concept.

At the end of each procedure, there will be instructions as to which data tables are required and what data should be plotted in order to complete the lab report for the specific lab. Occasionally, you may be asked to answer certain questions in your discussion of a task or in the conclusion. Your individual lab TA will give you more specifics on what is required each week.

Lab TAs can decide their own penalties for accepting late lab reports. However, Lab Reports submitted more than 1 week late should receive 0 credit. Each group should submit one lab report with the names of all lab partners on the title page. It is expected that each group member contributes equally to the total effort.

There are a couple of general guidelines that all students and TAs will be expected to follow when preparing their lab reports:

1. Lab reports must be typed. (This includes any formulas). There are ample computing facilities on campus with MS Word. Ask the TA if you are having difficulty locating one.
2. Graphs must be done using a computer aided graphing program such as MS Excel, MATLAB, MATCHAD or similar scientific graphic program.
3. Everyone in the group should understand every aspect of the lab write-up.
4. Your lab report must be handed in as soon as you come into the lab or it will be considered late.

The Lab TA will provide complete details of expectations for the lab.
Course title and number: ECEN 438 Power Electronics
Term: Fall 2016

Lecture times and location: TBD
Lecture: 3 hours  Lab: 3 hours
Credit: 4

Instructor: Prof. Robert S. Balog
Department of Electrical and Computer Engineering
205D Wisenbaker Engineering Building (WEB)
979-862-4985
rbalog@ece.tamu.edu

Office Hours: online via Piazza 24x7, in person by appointment

Course Description and Prerequisites
Electric power conditioning and control; characteristics of solid state power switches; analysis and experiments with AC power controllers, controlled rectifiers, DC choppers and DC-AC converters; applications to power supplies, airborne and spaceborne power systems. Prerequisite: Junior or senior classification in electrical engineering or approval of instructor.

Textbook and/or Resource Material

Course Reserves: http://library.tamu.edu/services/course-reserves/


Digital Media
Piazza.com – social learning environment / discussion board available on multiple platforms via web or downloadable app. Students registered on Howdy should all have automatically received an invitation email at their email.tamu.edu mail address.

eCampus – recording and disseminating grades

MediaMatrix – disseminating recorded lecture material and problem solving sessions

Grading Policies
There will be two mid-term exams and a final exam. The exams will take place as per the schedule below, unless you are notified of a change in date and time. Reading assignments will not be made; you are expected to study the book topics as appropriate. The dates indicated for the material are approximate; some modifications will be inevitable. There may be important email communications (like a change in the test date) to the class, so it is important for you to monitor Piazza.com for the latest information.
2 Exams: 40%  |  Grading Scale (out of 100):
Laboratory: 20%  |  A: 90-100; B: 80-89; C: 70-79;
Homework / Quizzes / Class participation: 20%  |  D: 60-69; F: 59 or lower
Final Exam: 20%  |  The instructor reserves the right to adjust (curve)
  100% the grading scale downward.

Laboratory attendance & grade is mandatory to pass the course. Graduate students taking ECEN 738 will have different problems on the exams from undergraduates taking ECEN 438.

Attendance and Make-up Policies

Make-ups will be granted only for university-excused absences with proper documentation. Refer to student rule 7 at http://student-rules.tamu.edu/rule07 for all policies regarding excused absences.

Homework / Quizzes / Class Participation

Weekly homework will be assigned. In-class quizzes will consist of a randomly selected problem from the homework set. Class participation will be based upon active participation in the Piazza online forum judged by contribution to questions asked by other students.

Computer Access

To use PSPICE, LabView or other software, you can either use the ECE open access lab (OAL) when not in use by a scheduled lab section.

Learning Outcomes or Course Objectives

The learning outcomes include the following ABET Criteria:
- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to identify, formulate, and solve engineering problems
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Academic Integrity

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
For additional information please visit: http://aggiehonor.tamu.edu/
University Regulations Student Handbook: http://student-rules.tamu.edu
Definition of Academic Misconducts: http://student-rules.tamu.edu/rule52

The handouts used in this course are copyrighted. The definition of "handouts" is all materials generated for this class, which include but are not limited to syllabi, homework assignments, in-class materials, and additional printed materials except published scientific papers for personal use. Because these materials are copyrighted, you do not have the right to make additional copies of the handouts unless the instructor of this course expressly grants permission. As commonly defined, plagiarism consists of passing off the ideas, words, writings, etc., of another as one's own. In accordance with this definition, you are committing plagiarism if you copy the work of another person without proper citation and acknowledgement, and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic offenses, for the plagiarist destroys the trust among colleagues without which research cannot be safely
communicated. **Paraphrasing** without proper citation and acknowledgement is one form of plagiarism. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty". Any forms of dishonesty including, but not limited to, cheating on any examinations and plagiarism will be handled according to the procedures outlined by the Aggie Honor System Office.

**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

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**Tentative Course Topics & Key Dates**

<table>
<thead>
<tr>
<th>Week</th>
<th>Sections</th>
<th>Topic (tentative, subject to change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.1 to 1.5, 2.2, 2.5</td>
<td>Power Electronics – Introduction, Power Computations</td>
</tr>
<tr>
<td>2.</td>
<td>2.6 – 2.8, 4.2</td>
<td>RMS, Apparent power &amp; power factor, Rectifiers</td>
</tr>
<tr>
<td>3.</td>
<td>4.2, 4.3</td>
<td>Rectifiers, Single phase rectifiers</td>
</tr>
<tr>
<td>4.</td>
<td>4.3, 4.4</td>
<td>Single phase rectifiers, Three phase rectifiers</td>
</tr>
<tr>
<td>5.</td>
<td>4.4, 4.5</td>
<td>Three phase rectifiers, Controlled three-phase rectifiers</td>
</tr>
<tr>
<td>6.</td>
<td>6.1 to 6.2</td>
<td>DC-DC converters, Buck Converter, <strong>EXAM 1: Rectifiers</strong></td>
</tr>
<tr>
<td>7.</td>
<td>6.6, 6.5</td>
<td>Buck-Boost converter, Boost Converter</td>
</tr>
<tr>
<td>8.</td>
<td>6.7, 6.8</td>
<td>Ćuk and SEPIC Converters</td>
</tr>
<tr>
<td>9.</td>
<td>7.2</td>
<td>DC Power Supplies</td>
</tr>
<tr>
<td>10.</td>
<td>7.3, 7.4</td>
<td>Flyback and Forward Converters</td>
</tr>
<tr>
<td>11.</td>
<td>7.5, 7.6</td>
<td>Two-switch converters</td>
</tr>
<tr>
<td>12.</td>
<td>8.2, 8.3</td>
<td>DC-AC Inverters, <strong>EXAM 2: DC-DC Converters</strong></td>
</tr>
<tr>
<td>13.</td>
<td>8.4 to 8.5</td>
<td>DC-AC Inverters</td>
</tr>
<tr>
<td>14.</td>
<td>8.6 to 8.8, 8.10 to 8.12</td>
<td>DC-AC Inverters, Pulse Width Modulation</td>
</tr>
</tbody>
</table>
Introduction to the Laboratory Portion of ECEN 438

Note: You cannot adequately perform the experiment each week if you have not completed your prelab first. Therefore, if you do not turn in your prelab at the beginning of the lab period, you will receive a zero on your prelab for that week.

Lab Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No lab meeting - first week of class</td>
</tr>
<tr>
<td>2</td>
<td>Demonstration 1 – “Introduction to the Laboratory”</td>
</tr>
</tbody>
</table>
| 3    | Experiment 1 – “Basic Rectifier Circuits”  
      | Lab Report for Demonstration 1 Due |
| 4    | Experiment 2 – “AC-DC Conversion Part I: Single-Phase Conversion”  
      | Lab Report for Experiment 1 Due |
| 5    | Experiment 3 – “AC-DC Conversion Part II: Poly-Phase Conversion”  
      | Lab Report for Experiment 2 Due |
| 6    | No Lab – Exam I |
| 7    | Experiment 4 – “Models for Real Components”  
      | Lab Report for Experiment 3 Due |
| 8    | Experiment 5 – “DC-DC Conversion Part I: Buck-Derived Converters”  
      | Lab Report for Experiment 4 Due |
| 9    | Experiment 6 – “DC-DC Conversion Part II: Boost-Derived Converters”  
      | Lab Report for Experiment 5 Due |
| 10   | Experiment 7 – “DC-DC Conversion Part III: Isolated Converters”  
      | Lab Report for Experiment 6 Due |
| 11   | No Lab – Exam II study week |
| 12   | Experiment 8 – “DC-AC Conversions Part I: Voltage-Sourced Inverters”  
      | Lab Report for Experiment 7 Due |
| 13   | No Lab – Thanksgiving Holiday |
| 14   | Experiment 9 – “DC-AC Conversion Part II: Pulse Width Modulated Inverters”  
      | Lab Report for Experiment 8 Due |
| 15   | No Lab – Reading Period  
      | Lab Report for Experiment 9 Due |

Attendance in Lab is MANDATORY. You are responsible for attending your lab section each week of the semester. If there is some special situation, you must discuss it with your TA before the meeting of the lab section. Only university approved absences or excuses will be accepted.

A sample of how the lab will be run each week is:
6. Turn in lab report due that week.
7. Turn in the pre-lab assignment for the lab.
8. The TA will explain any pertinent details of the experiment to be performed.
9. Perform the lab.
10. After the lab, perform data analysis, compare experimentally measured data to expected data, discuss differences and possible sources of error, and prepare report.

Laboratory Grading –

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre lab assignment</td>
<td>30%</td>
</tr>
<tr>
<td>Laboratory report</td>
<td>70%</td>
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<td><strong>Total</strong></td>
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One week after each lab experiment, you will be required to submit a written lab report. For each lab, experiment performed, the lab report should include:

10. A title page
11. A brief summary of what the procedure you performed and how it demonstrated a specific electrical engineering theory
12. Data tables with results
13. Example calculations and derivation of equations for any calculations needed in the data tables
14. High-impact graphs of data requested in the lab
15. Comments about each task for a lab, the theory you learned by doing the experiment, and any explanation of results that are more than +/- 10% of the expected value
16. Compared the results of the pre-lab to the results obtained in the experiment. Comment on any discrepancies and plausible sources of the disagreement using good engineering judgement.
17. As directed by your TA, repeat the pre-lab simulation using component data measured in the lab.
18. A conclusion that summarizes why the experiment was performed and suggestions for further study of any theoretical concept.

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The Lab TA will provide complete details of expectations for the lab.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:
   - Undergraduate  ☐  Graduate  ☒  First Professional  ☐  Other  ☐

2. Request submitted by (Department or Program Name):
   Department of Electrical and Computer Engineering

3. Course prefix, number and complete title of course:
   ECEN 742 DSP Based Electromechanical Motion Control

4. Catalog course description (not to exceed 50 words):
   Overview of energy conversion and basic concepts on electromechanical motion devices; different control strategies including the solid-state drive topologies; for every electromechanical motion device, its DSP control implementation discussed and implemented in the lab.

5. Prerequisite(s):
   Graduate classification or approval of instructor.
   Cross-listed with:  Stacked with:  ECEN 442
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course?
   - Yes  ☐  No  ☒  If yes, from ______ to ______

7. Is this a repeatable course?
   - Yes  ☐  No  ☒  If yes, this course may be taken ______ times.

   Will this course be repeated within the same semester?
   - Yes  ☐  No  ☒

8. Will this course be submitted to the Core Curriculum Council?
   - Yes  ☐  No  ☒

9. How will this course be graded:
   - Grade  ☒  S/U  ☐  P/F (CLMD)

10. This course will be:
   a. required for students enrolled in the following degree program(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., Ph.D. in ELEN or CEEN

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.
12. ☒ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix  Course #  Title (excluding punctuation)
    ECEN  742  DSP-BASED MOTION CONTROL

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>Other</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>EICE Code</th>
</tr>
</thead>
<tbody>
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<td>3.00</td>
<td></td>
<td>3.00</td>
<td>1440010006</td>
<td>0936</td>
<td>16 - 17</td>
<td>0 0 3 6 3 2</td>
</tr>
</tbody>
</table>

Approval recommended by:
Jose Silva-Martinez
Department Head or Program Chair (Type Name & Sign)  Date: 05/20/2015

Chair of the College Review Committee  Date: 06/11/15
Dean of College  Date: 7-22-15

Submitted to Coordinating Board by:
Associate Director, Curricular Services  Date: 7-22-15

Effective Date: 7-22-15

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14
Course title and number  ECEN 742 DSP-Based Electromechanical Motion Control
Term (e.g., Fall 200X)  Fall 2016
Meeting times and location  TBD

Course Description and Prerequisites
Overview of energy conversion and basic concepts on electromechanical motion devices; different control strategies including the solid-state drive topologies; for every electromechanical motion device, its DSP control implementation discussed and implemented in the lab. Prerequisites: Graduate classification or approval of instructor.

Learning Outcomes
Upon completion of the course, students will be able to:
- Program digital signal processor board
- Understand and control dc motors
- Understand and control permanent magnet brushless dc motors
- Understand and control stepper motors
- Understand and control induction motors

Instructor Information
Name  Hamid A. Toliyat
Telephone number  (979) 862-3034
Email address  toliyat@tamu.edu
Office hours  TBD
Office location  WEB 205-E

Textbook and/or Resource Material
References:
2. Piccolo Microcontrollers (TMS320F28035) and related references
3. C2000 Piccolo Multi-Day Workshop
Note: Reference guides for the specific equipment being used in the lab will be sent to you.

Grading Policies
Lab: 35%
Homework & Quiz: 15%
Exam #1: 20%
Exam #2: 20%
Lab-based mini-project: 10%

A = 90-100  B = 80-89  C = 70-79  D = 60-69  F = Less than 60
Attendance and Make-up Policies

- Attendance in lab is mandatory.
- Unexcused late lab reports or homework will be penalized in the following way:
  1-5 days late – 10% off the top for each day
  5 days late – 0 for the assignment
- I will not contact you to tell you that your assignment is late. You must make arrangements with me if, for some reason, you find you must hand in a late assignment.
- Refer to student rule 7 at http://student-rules.tamu.edu/rule07 for all policies regarding excused absences

Course Topics, Calendar of Activities, Major Assignment Dates

Exams will occur at 6:00 PM on the scheduled dates. Please notify any conflicts with your schedule as soon as possible.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DSP based control and applications</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Piccolo based hardware introduction, Introduction to C programming</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Piccolo General Purpose IO (GPIO) programming</td>
<td>Lab 1 – Introduction, Coding in C</td>
</tr>
<tr>
<td>4</td>
<td>Piccolo Interrupt Sources</td>
<td>Lab 2 - GPIO</td>
</tr>
<tr>
<td>5</td>
<td>Piccolo analog to digital converter (ADC)</td>
<td>Lab 3 - Interrupts</td>
</tr>
<tr>
<td>6</td>
<td>Piccolo PWM signal generating module</td>
<td>Lab 4 – ADC</td>
</tr>
<tr>
<td>7</td>
<td>Piccolo QEP module, Stepper motors</td>
<td>Lab 5 – PWM &amp; DAC</td>
</tr>
<tr>
<td>8</td>
<td>Exam #1</td>
<td>None</td>
</tr>
<tr>
<td>9</td>
<td>Electric motor theory (DC, Synchronous and Induction motors)</td>
<td>Lab 6 – Stepper motor drive</td>
</tr>
<tr>
<td>10</td>
<td>Electric motor theory</td>
<td>Lab 6 - continued</td>
</tr>
<tr>
<td>11</td>
<td>Electric motor theory</td>
<td>Lab 7 - DC motor control</td>
</tr>
<tr>
<td>12</td>
<td>Electric motor theory</td>
<td>Lab 7 - continued</td>
</tr>
<tr>
<td>13</td>
<td>Advanced motor control algorithms</td>
<td>Lab 8 - BLDC motor drive</td>
</tr>
<tr>
<td>14</td>
<td>Exam #2</td>
<td>Lab 8 - continued</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Lab Usage Policy

- Lab will be open for groups working only on the course material
- Turn off equipment before you leave
- Lab is not open to work on other class material
- Lab is not open during other scheduled lab times even if there are open benches
- Lab will be closed if it becomes trashed out or if the door is found propped open
- Please make up missed or incomplete labs on your own time
- Please email your TA when using the lab outside of your scheduled lab time

Lab Reports

- Reports are to be done in the same pairs that the labs are done in
- Reports are due at the beginning of your scheduled lab time the week I specify
Outline for Lab Reports

- Title Page
- Overview – covers the introduction and the general procedure of any tasks, any difficulties (not hardware related) in getting code to work, and any equations and calculations used during lab
- Applications – a good paragraph or two covering general uses to more specific applications as the lab progresses
- Flowchart – for each task create a flowchart, either NEATLY drawn by hand or computer-drafted
- Code WITH COMMENTS
- Get checked off once you have completed lab, half of each lab grade will be completion

Lab reports should follow the general guidelines of TECHNICAL writing:
1. Do not use 1st or even 2nd person in any writing
2. Equations should be typed out using a program such as Equation Editor
3. Formatting for symbols should be used such as Greek letters, subscripts, etc.
4. Waveforms and screenshots are not simply stapled to the back of the report. They should be pasted within the text of the document close to the section where they are referenced. They should be labeled on the bottom with smaller font in bold.

Check TAMU Email accounts and eCampus page often for announcements.

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

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

Plagiarism will NOT be tolerated. Attempts at having another student do your work will result in a zero for that work for the student copying and the student who is doing the copying. Further penalties may apply, especially with repeat offenses.

For additional information please visit: http://aggiehonor.tamu.edu
Course title and number          ECEN 442 DSP-Based Electromechanical Motion Control
Term (e.g., Fall 200X)           Fall 2016
Meeting times and location      TBD

Course Description and Prerequisites
Overview of energy conversion and basic concepts on electromechanical motion devices: different control strategies including the solid-state drive topologies; for every electromechanical motion device, its DSP control implementation discussed and implemented in the lab. Prerequisites: Grade of C or better in ECEN 314; junior or senior classification.

Learning Outcomes
Upon completion of the course, students will be able to:
- Program digital signal processor board
- Understand and control dc motors
- Understand and control permanent magnet brushless dc motors
- Understand and control stepper motors
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Instructor Information
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Textbook and/or Resource Material
References:
2. Piccolo Microcontrollers (TMS320F28035) and related references http://focus.ti.com/lit/ds/symlink/tms320f28035.pdf
Note: Reference guides for the specific equipment being used in the lab will be sent to you.

Grading Policies
Lab: 40%
Homework & Quiz: 20%
Exam #1: 20%
Exam #2: 20%

A = 90-100   B = 80-89   C = 70-79   D = 60-69   F = Less than 60
Attendance and Make-up Policies

- Attendance in lab is mandatory.
- Unexcused late lab reports or homework will be penalized in the following way:
  1-6 days late – 10% off the top for each day
  5 days late – 0 for the assignment
- I will not contact you to tell you that your assignment is late. You must make arrangements with me if, for some reason, you find you must hand in a late assignment.
- Refer to student rule 7 at http://student-rules.tamu.edu/rule07 for all policies regarding excused absences

Course Topics, Calendar of Activities, Major Assignment Dates

Exams will occur at 6:00 PM on the scheduled dates. Please notify any conflicts with your schedule as soon as possible.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DSP based control and applications</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Piccolo based hardware introduction, Introduction to C programming</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Piccolo General Purpose IO (GPIO) programming</td>
<td>Lab 1 – Introduction, Coding in C</td>
</tr>
<tr>
<td>4</td>
<td>Piccolo Interrupt Sources</td>
<td>Lab 2 - GPIO</td>
</tr>
<tr>
<td>5</td>
<td>Piccolo analog to digital converter (ADC)</td>
<td>Lab 3 - Interrupts</td>
</tr>
<tr>
<td>6</td>
<td>Piccolo PWM signal generating module</td>
<td>Lab 4 – ADC</td>
</tr>
<tr>
<td>7</td>
<td>Piccolo QEP module, Stepper motors</td>
<td>Lab 5 – PWM &amp; DAC</td>
</tr>
<tr>
<td>8</td>
<td>Exam #1</td>
<td>None</td>
</tr>
<tr>
<td>9</td>
<td>Electric motor theory (DC, Synchronous and Induction motors)</td>
<td>Lab 6 – Stepper motor drive</td>
</tr>
<tr>
<td>10</td>
<td>Electric motor theory</td>
<td>Lab 6 - continued</td>
</tr>
<tr>
<td>11</td>
<td>Electric motor theory</td>
<td>Lab 7 - DC motor control</td>
</tr>
<tr>
<td>12</td>
<td>Electric motor theory</td>
<td>Lab 7 - continued</td>
</tr>
<tr>
<td>13</td>
<td>Advanced motor control algorithms</td>
<td>Lab 8 - BLDC motor drive</td>
</tr>
<tr>
<td>14</td>
<td>Exam #2</td>
<td>Lab 8 - continued</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Lab Usage Policy

- Lab will be open for groups working only on the course material
- Turn off equipment before you leave
- Lab is not open to work on other class material
- Lab is not open during other scheduled lab times even if there are open benches
- Lab will be closed if it becomes trashed out or if the door is found propped open
- Please make up missed or incomplete labs on your own time
- Please email your TA when using the lab outside of your scheduled lab time

Lab Reports

- Reports are to be done in the same pairs that the labs are done in
- Reports are due at the beginning of your scheduled lab time the week I specify
Outline for Lab Reports

- Title Page
- Overview – covers the introduction and the general procedure of any tasks, any difficulties (not hardware related) in getting code to work, and any equations and calculations used during lab
- Applications – a good paragraph or two covering general uses to more specific applications as the lab progresses
- Flowchart – for each task create a flowchart, either NEATLY drawn by hand or computer-drafted
- Code WITH COMMENTS
- Get checked off once you have completed lab, half of each lab grade will be completion

Lab reports should follow the general guidelines of TECHNICAL writing:
1. Do not use 1st or even 2nd person in any writing
2. Equations should be typed out using a program such as Equation Editor
3. Formatting for symbols should be used such as Greek letters, subscripts, etc.
4. Waveforms and screenshots are not simply stapled to the back of the report. They should be pasted within the text of the document close to the section where they are referenced. They should be labeled on the bottom with smaller font in bold.

Check TAMU Email accounts and eCampus page often for announcements.

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

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

Plagiarism will NOT be tolerated. Attempts at having another student do your work will result in a zero for that work for the student copying and the student who is doing the copying. Further penalties may apply, especially with repeat offenses.

For additional information please visit: http://aggiehonor.tamu.edu
Texas A&M University  
Departmental Request for a New Course  
Undergraduate • Graduate • Professional  
• Submit original form and attach a course syllabus. •

Form Instructions
1. Course request type:  
☐ Undergraduate  ☑ Graduate  ☐ First Professional (M.D., M.D., M.D., PharmD, DVM)

2. Request submitted by (Department or Program Name):  
Department of Electrical and Computer Engineering

3. Course prefix, number and complete title of course:  
ECEN 767 Harnessing Solar Energy: Optics, Photovoltaics and Thermal Systems

4. Catalog course description (not to exceed 50 words):  
Solar radiation characteristics and measurement; optical coatings including reflection, transmission, absorption and emissivity; concentrating optics, tracking and etendue limit; photovoltaic cells, modules and systems overview; introduction to solar thermal systems.

5. Prerequisite(s):  
Graduate classification or approval of instructor.

Cross-listed with:  
Stacked with:  
ECEN 467

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

6. Is this a variable credit course?  
☐ Yes  ☑ No  
If yes, from _____ to _____

7. Is this a repeatable course?  
☐ Yes  ☑ No  
If yes, this course may be taken _____ times.

Will this course be repeated within the same semester?  
☐ Yes  ☑ No

8. Will this course be submitted to the Core Curriculum Council?  
☐ Yes  ☑ No

Will this course be submitted to the Core Curriculum Council?  
☐ Yes  ☑ No

9. How will this course be graded?  
☑ Grade  ☐ S/U  ☐ P/F (CLMD)

10. 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., Ph.D. in ELEN or CEEN

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

12. ☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix Course # Title (excluding punctuation)  
ECEN 767 HARNESING SOLAR ENERGY

<table>
<thead>
<tr>
<th>Lec.</th>
<th>Lab</th>
<th>Other</th>
<th>SH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
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<td>16</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Approval recommended by:  

Jose Silva-Martinez  
Department Head or Program Chair (Type Name & Sign)  

Date  
Chair, College Review Committee  

Date  

Department Head or Program Chair (Type Name & Sign)  
(If cross-listed course)  

Date  
Dean of College  

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 or sandra.williams@tamu.edu.

Curricular Services – 07/14
Course title and number
Harnessing Solar Energy: Optics, Photovoltaics and Thermal Systems
ECEN 767

Term
Spring TBA

Lecture times and location
TR 2:20-3:35PM, JEB 7xx

Laboratory Times
Section 501/601: TBD
Section 502/602: TBD
Section 503/603: TBD
Section 504/604: TBD
Section 505/605: TBD
Section 506/606: TBD

Official Class Syllabus
Posted on ecampus.tamu.edu

Course Description and Prerequisites
Solar radiation characteristics and measurement; Optical coatings including reflection, transmission, absorption and emissivity; Concentrating optics, tracking and etendue limit; Photovoltaic cells, modules and systems overview. Introduction to solar thermal systems.

Prerequisites: Graduate classification or approval of instructor.

Learning Outcomes or Course Objectives
- Describe and analyze optical coatings, including their refraction, absorption, transmission and reflection properties and wavelength dependence
- Describe the physical basis for light-matter interactions and energy conversion, including those underlying optical detectors for different wavelength ranges and for photovoltaic cells
- Apply optical analysis tools including ray optics, Gaussian beams, and diffraction to basic optical systems incorporating concentrating lenses and mirrors, understand etendue limit for concentrating systems
- Analyze fundamental properties and limitations of photovoltaic cells, particularly as they relate to efficiency and various factors impacting efficiency
- Develop laboratory skills and ability to measure solar irradiance, as well as the input and output energy for basic solar photovoltaic and thermal systems for calculating system efficiency

Instructor Information
Name
Christi Madsen
Telephone number
979-845-4935
Email address
cmadsen@tamu.edu
Office hours
After lectures or by appointment
Office location
JEB 724
TA
TBA

Textbook and/or Resource Material
- Wenham and Green, Applied Photovoltaics, (2007), available online through library, Ch. 1-6.
- Kalogirou, Solar Energy Engineering: Processes and Systems (2009), available online through library, Ch. 3-5.
Class Policies and Grading

Policies:
1. You are expected to attend all lectures and your assigned lab time.
2. Unexcused late work will be penalized 10% per day and in accordance with the university excused absence and attendance policy.
   See http://student-rules.tamu.edu/rule07.
3. Lab reports should be done on a word processor and printed for submission to the TA.
4. Graduate students taking ECEN 767 will be assigned 20% more problems in labs and tests compared to undergraduate students taking ECEN 467.

Grading:
Lab Reports (Lab Project report is treated as one of the lab reports) 50%
Midterm Exam 15%
Final Exam 35%

Grading scale: 90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F.

Mid-term Exam: TBD
Final Exam: TBD
Project Report Deadline: TBD by 5pm. Submit report by email.

Lecture Schedule
Week 1  Introduction & Lab Safety
Week 2-3 Solar Irradiance: Global, Diffuse and Direct
Week 4-5 Transmission, Reflection, Absorption, and Emissivity
Week 6-7 Optical Coatings & Applications
Week 8  Concentrating Optics & Diffraction
Week 9-10 Photovoltaic Conversion: Cells, Efficiency limits
Week 11  Photovoltaic Systems
Week 12-13 Solar to thermal energy conversion
Week 14  Solar thermal systems

Lab Schedule

<table>
<thead>
<tr>
<th>Lab#</th>
<th>Title</th>
<th>Week</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Safety &amp; Introduction</td>
<td>1</td>
<td>Safety and Introductory material</td>
</tr>
<tr>
<td>1</td>
<td>Solar Irradiance</td>
<td>2-3</td>
<td>Photodetectors and thermal detectors, Measuring global, diffuse and direct</td>
</tr>
<tr>
<td>2</td>
<td>Basic Optical</td>
<td>4-5</td>
<td>Learn about and use broadband source and diffraction gratings for wavelength-</td>
</tr>
<tr>
<td></td>
<td>Measurements</td>
<td></td>
<td>dependent measurements</td>
</tr>
<tr>
<td>3</td>
<td>Optical thin film</td>
<td>6-7</td>
<td>Measure transmission and reflection, calculate absorption and emissivity</td>
</tr>
<tr>
<td></td>
<td>coatings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Concentrating optics</td>
<td>8</td>
<td>Measure concentration factor and estimate efficiency of concentrating optics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and tracking requirements</td>
</tr>
<tr>
<td>5</td>
<td>Photovoltaic cells</td>
<td>9-11</td>
<td>Measure I-V characteristics and single and multi-junction photovoltaic cells</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>calculate efficiency, measure modules and overall output of a small PV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>system</td>
</tr>
<tr>
<td>6</td>
<td>Solar thermal systems</td>
<td>12-14</td>
<td>Measure the input and output energy of a solar thermal system (evacuated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>tube system) and calculate system efficiency, compare to PV system</td>
</tr>
</tbody>
</table>
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://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Texas A&M University
Departmental Request for a New Course
Undergraduate ♦ Graduate ♦ Professional
- Submit original form and attach a course syllabus.

Form Instructions:
1. Course request type:  ☑ Undergraduate  ☑ Graduate  ☑ First Professional (DDS, MD, JD, Ph.D., DVM)
2. Request submitted by (Department or Program Name): Department of Materials Science and Engineering
   MSEN 617 Crystallography and Crystal Structure Determination
3. Course prefix, number and complete title of course:

4. Catalog course description (not to exceed 50 words):
   Crystal structure and determination; symmetry operations in point group and space group; reciprocal lattice and kinematical diffraction theory; structure determination by X-ray diffraction and transmission electron microscopy (TEM).

5. Prerequisite(s):
   Knowledge of calculus and vector algebra; graduate classification
   Cross-listed with:  Stacked with:
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course?  ☑ Yes  ☑ No
   If yes, from ______ to ______

7. Is this a repeatable course?  ☑ Yes  ☑ No
   If yes, this course may be taken _____ times.
   Will this course be repeated within the same semester?  ☑ Yes  ☑ No

8. Will this course be submitted to the Core Curriculum Council?
   ☑ Yes  ☑ No

9. How will this course be graded?  ☑ Grade  ☑ S/U  ☑ P/F (CLMD)

10. 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. Engr., M.S., M.D., Materials Science and Engineering

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

12. ☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix  Course #  Title (excluding punctuation)

   MSEN  617  CRYSTLGRPHY  CRYSTL STRUC DET

   Lect.  Lab  Other  SCH  CIP and Fund Code  Admin. Unit  Acad. Year  PICE Code
   3.00  0.00  0.00  3.00  1418010006  1864  15 -  16  0  0  3  6  3  3  2

   Approval recommended by:
   Dr. Miladin Radovic  06/10/2015
   Chair, College Review Committee  6/11/15
   Dean of College  6/11/15
   Chair, GC or UCC  7-22-15
   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14
MSEN 617
Crystallography and Crystal Structure Determination
Spring 2015
Credits: 3

Instructor: Li Liu
Email: li.liu@tamu.edu
Office Location: 415 MEOB
Office Phone: 979-458-1090
Office Hours: TBD
Meeting Time: TBD
Meeting Location: TBD

Course Prerequisites:
Knowledge in calculus and vector algebra

Course Description:
This course focuses on crystal structure and its determination. Symmetry operations in point group and space group are introduced first, followed by the reciprocal lattice and the kinematical diffraction theory. The second part of the class will teach the structure determination by x-ray diffraction and transmission electron microscopy (TEM).

Learning outcomes:
By the end of this course, students will be able to:
1. Identify the symmetry and symmetry operations.
2. Use basic structural concepts to describe the crystal structure.
3. Understand the reciprocal lattice and its applications in diffraction.
4. Understand the kinematical theory of diffraction and apply it to x-ray diffraction.
5. Understand the contrast in TEM direct and diffraction imaging.

Course Schedule:
Week 1: Elements of crystals: Point group, unit cell, and crystal lattice
Week 2: Elements of crystals: Point group, unit cell, and crystal lattice
Week 3: Space group: symmetry and nomenclature in space group
Week 4: Space group: examples
Week 5: Space group: applications in crystal structure
Week 6: Basic x-ray Physics: Emission/Adsorption/Reflection of x-rays
Week 7: Reciprocal lattice
Week 8: Kinematical theory of diffraction
Week 9: X-ray diffraction: powder diffraction
Week 10: X-Ray diffraction: structure determination by powder diffraction
Week 11: X-ray diffraction: single crystal diffraction
Week 12: Transmission electron microscopy: direct imaging
Week 13: Transmission electron microscopy: dynamics diffraction theory
Week 14: Transmission electron microscopy: imaging by diffraction

Reference Books:
Leonld V. Azároff, Elements of X-Rays Crystallography, McGraw-Hill

The chosen chapters of the first textbook will be photocopied and handed out to the class since this book is not available for purchase. The second textbook can be downloaded from university library website.

The reference books are supplementary to the lecture note. The student is required to master the material in the notes and the related material in the text books.

Examinations: Midterm and comprehensive final examination.
Problems: problem sheets will be assigned through emails.

Communication: Problem sheets and class notes will be sent to each student by e-mail. Questions on course material may be sent to Dr. Liu by e-mail.

Grading:

<table>
<thead>
<tr>
<th></th>
<th>points</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>14</td>
<td>A problem sheet will be assigned each week</td>
</tr>
<tr>
<td>Midterm exam</td>
<td>36</td>
<td>90-minute exam</td>
</tr>
<tr>
<td>Final exam</td>
<td>50</td>
<td>120-minute exam</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The final weighted average of each student will be calculated based on the indicated grade distribution. The letter grade will be assigned by the following criterion:
A>= 90;  80 ≤ B<90;  70≤ C< 80;  60≤ D<70;  F<60

Grading will not be based on a curve or on normal distribution.

Americans with Disabilities Act (ADA) Policy statement: The Americans with Disabilities Act (ADA) is a federal antidiscrimination 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 room B118 Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.
Class form available at http://attendance.tamu.edu or (ii.) Confirmation of
visit to a health care professional affirming date and time of visit.
7) Required participation in military duties.
8) Mandatory admission interviews for professional or graduate school that cannot be
rescheduled.
Other absences may be excused at the discretion of the instructor with prior notification and
proper documentation. In cases where prior notification is not feasible (e.g., accident or
emergency) the student must provide notification by the end of the second working day after
the absence, including an explanation of why notice could not be sent prior to the class.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
* Submit original form and attach a course syllabus.*

Form Instructions
1. Course request type:
   - Undergraduate
   - Graduate
   - First Professional (DDS, MD, JD, PharmD, DVM)

2. Request submitted by (Department or Program Name):
   - Department of Veterinary Pathobiology
   - VPAT 610 Cell Mechanisms of Disease

3. Course prefix, number and complete title of course:

4. Catalog course description (not to exceed 50 words):
   Cellular mechanisms, morphologic manifestations and clinical presentations of illustrative disease processes.
   Prerequisites: Enrollment as a graduate student in BIMS, VTPB or BMEN, and permission of instructor.

5. Prerequisite(s):
   Permission of instructor.
   Cross-listed with: 
   Stacked with: VTPB 410
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? 
   - Yes
   - No
   If yes, from _______ to _______

7. Is this a repeatable course? 
   - Yes
   - No
   If yes, this course may be taken _______ times.
   Will this course be repeated within the same semester? 
   - Yes
   - No

8. Will this course be submitted to the Core Curriculum Council? 
   - Yes
   - No

9. How will this course be graded? 
   - Grade
   - S/U
   - P/F (CLMD)

10. 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)
   Graduate students in BIMS, VTPB, BMEN

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

12. [✓] I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpx.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix: VPAT  
    Course #: 610  
    Title (excluding punctuation): Cell Mechanisms of Disease

<table>
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<th>Lab</th>
<th>Other</th>
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<th>CHI and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
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Approval recommended by:

Dr. Roger Smith III  
Department Head or Program Chair (Type Name & Sign)  
Date

Dr. Jane Welsh  
Chair, College Review Committee  
Date

Dean of College  
Date

Chair, SC or UCC  
Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
Curricular Services – 07/14
VPAT 610, Special Topics in Cell Mechanisms of Disease  
Fall Semester, 2015

**General Course Description and Goals:**

A special-topics graduate course in the basic cellular mechanisms and general manifestations of disease. Clinical and anatomical/morphological aspects of various diseases are used for illustration. Upon completion of this course, the student will have a basic medical vocabulary, understand the basic mechanisms of disease, and have an understanding of the descriptive terms used in pathology.

**Instructor:**

B.R. Wecks, DVM, PhD
Diplomate, American College of Veterinary Pathologists (ACVP)
Professor, Department of Veterinary Pathobiology
Office: 54XB College of Veterinary Medicine
E-mail: bweeks@cvm.tamu.edu

**Prerequisites:**

Graduate Student Enrollment in BIMS, VTPB, or BMEN curriculum and permission of instructor

**Class meetings:**

Attendance at all scheduled class meetings is expected.
*Per University policy, attendance will be checked and recorded.*

Tuesday and Thursday,  
Room ???, College of Veterinary Medicine

**Schedule of Events:**

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>First class meeting</td>
<td>September 1</td>
</tr>
<tr>
<td>First Examination (100 pts.)</td>
<td>October 6</td>
</tr>
<tr>
<td>Second Examination (100 pts.)</td>
<td>November 10</td>
</tr>
<tr>
<td>Term Project Due (100 points)</td>
<td>November 10</td>
</tr>
<tr>
<td>Last class meeting</td>
<td>December 8</td>
</tr>
<tr>
<td>Final Examination (100 pts.)</td>
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<td><em>Set by the Registrar’s office</em></td>
</tr>
</tbody>
</table>

**Textbook and Course Materials:**

No textbook is required. The Introductory / General Pathology sections of any current medical Pathology textbook would provide good supplemental reading. A printed set of class notes is available, in the Media Resources department. Reading assignments from various scientific literature sources are an option.

**Students with Disabilities:**

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 979-845-1637. For additional information visit http://disability.tamu.edu.
Exams and Grading

The first two examinations will take the place of regularly-scheduled lectures. The third, final exam will be administered as scheduled by the Office of the Registrar, during "finals week". Examinations may consist of any combination of multiple-choice questions, written short / long answers, True / False, matching, etc. Examination topics may include any class activity: regular lectures, guest lectures, reading assignments, demonstrations, video, in-class discussions, etc. All examinations are comprehensive, due to the fact that concepts presented throughout the course are interrelated.

In the event of a student's excused absence from an exam, a make-up examination will provided in written format (see below). Unexcused absence from an examination will result in a grade of "zero" (no grading points) for that examination. The final examination is mandatory, comprehensive, and equal in value to the others (100 points). The semester course grade is based upon the student's total score (points accumulated) for the 3 examinations and the required Term Paper / Project.

Term Paper or Project:
In addition to regularly-scheduled examinations, a term paper or project will be required. This project or paper will be in a topic relevant to the course and to the student's area of interest. The topic and scope of the project must be pre-approved by the instructor. The project / paper will be worth up to 100 grading points.

Course Grading Scale:
(400 total grading points are possible).
360 to 400 points: A
320 to 359 points: B
280 to 319 points: C
240 to 279 points: D
239 or fewer points: F

Missed Examinations:
The Fall 2015 class meeting and examination schedule is included in this syllabus. Notify Dr. Weeks immediately if you must request an excused absence from an examination. Refer to the Texas A&M University "Student Rules"(available online at http://student-rules.tamu.edu/rule07) for explanations of attendance policy, excused vs. unexcused absences, and make-up exam policies. Note that class assignments and examinations in other courses (other than specific, defined circumstances for final examinations) are not an excuse for missing an examination in this course. Requests for alternative final examination time/date are made through the student's College administrative office.

Excused absences from examinations must be made-up promptly at a time and place agreed upon between student and instructor. Makeup examinations will be in written format. A student's unexcused absence from an examination results in a grade of "zero" (no grading points) for that examination.

Questions about Grading:
Any question about grading on an examination must be brought to the instructor's attention within 1 week after grades for the examination are posted or otherwise made available to the class. If scanned grading forms are used, the answer marked on the scanned form is your response. Unmarked responses and multiple responses are graded as incorrect.

Aggie Code of Honor

For many years Aggies have followed a Code of Honor, which is stated in this very simple verse:  An Aggie does not lie, cheat or steal or tolerate those who do.
http://aggiehonor.tamu.edu
Copyright Notice: (per Faculty Senate request)

"All handouts used in this course are copyrighted. Handouts include (but are not limited to) syllabus, quizzes, examinations, laboratory problems, take-home problem sets, in-class materials, review sheets, and computer module programs. Students do not have the right to copy any of the handouts without expressed permission of the course instructors."

Class Meeting and Examination Schedule: Fall Semester, 2015

September 1  Introductions, Syllabus, Background information.
September 3  Sectioning and Staining, Microscopy Techniques
September 8  Cell Injury: Reversible injury
September 10 Lethal Cell Injury and Cell Death
September 15 Necrosis
September 17 Pigments
September 22 Pigments / Tissue Deposits
September 24 Tissue Deposits / Cellular Adaptation
September 29 Tissue Adaptation and Growth Disturbances
October 1  Growth Disturbances

October 6  (Tuesday) Test One
October 8  Inflammation
October 13 Inflammation
October 15 Inflammation
October 20 Wound Healing
October 22 Basic Immunology Concepts

October 27 Basic Immunology Concepts
October 29 Immune-mediated Injury
November 3  Immune-mediated Injury
November 5  Immunological Diseases

November 10 (Tuesday) Test Two & Term Paper / Project Due.

November 12 Immune Deficiency Diseases
November 17 Disturbances of Blood Flow
November 19 Disturbances of Blood Flow
November 24 Clotting and Thrombosis

November 26  Thanksgiving Holiday

December 1  Clotting and Thrombosis
December 3  Neoplasia
December 8  Neoplasia (last class meeting)

December X Final Examination

Room