Course Change Request

Date Submitted: 07/19/18 3:40 pm

Viewing: ACCT 684: Professional Internship

Last approved: 07/10/18 3:40 am
Last edit: 07/19/18 3:40 pm

Changes proposed by: tblasor

Catalog Pages referencing this course
- ACCT - Accounting
  Department of Accounting

Programs referencing this course
- CERT-CU16: Energy Accounting - Certificate
- CERT-CU68: Internal Audit - Certificate
- BBA/MFM-ACCT/FINM-YFS: Bachelor of Business Administration in Accounting and
  Master of Financial Management, 5-Year Degree Program

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tara Blasor</td>
<td><a href="mailto:tblasor@tamu.edu">tblasor@tamu.edu</a></td>
<td>979-845-4289</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix  ACCT  Course number  684
Department  Accounting
College/School  Mays Business School
Academic Level  Graduate
Effective term  2019-2020  2017-2018

Complete Course Title
Professional Internship

Abbreviated Course Title
PROF INTERNSHIP

Catalog course description
Credit 1 to 6 each semester. A directed internship in an organization to provide students with on-the-job training under the supervision of accounting professionals in organizational settings appropriate to the student's professional objectives. May be taken for credit up to 3 hours. Must be taken on a satisfactory/unsatisfactory basis. Classification 6 students may not enroll in this course.

Prerequisites and Restrictions
- Accounting major or approval of committee chair and department head.

Should catalog prerequisites/concurrent enrollment be enforced?
No

Crosslisted With
No

Stacked with
No

In Workflow
1. ACCT Department Head
2. Curricular Services Review
3. BA Committee Preparer GR
4. BA Committee Chair GR
5. BA College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Provost II
10. President
11. Curricular Services
12. Banner

Approval Path
1. 07/12/18 8:42 am
   James Benjamin (j-benjamin): Approved for ACCT Department Head
2. 07/17/18 1:26 pm
   Terra Bisse (t.bisse): Rollback to Initiator
3. 07/19/18 5:07 pm
   James Benjamin (j-benjamin): Approved for ACCT Department Head
4. 07/20/18 8:35 am
   Terra Bissett (t.bissett): Approved for Curricular Services Review
5. 07/23/18 9:10 am
   Angela Catlin (acatlin): Approved for BA Committee Preparer GR
6. 07/23/18 9:27 am
   Michael Shaub (mshaub): Approved for BA Committee Chair GR
7. 07/24/18 12:59 pm
   Michael Kinney (kinneym): Approved for BA College Dean GR
8. 07/31/18 12:50 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer
9. 08/09/18 8:48 am
   LaRhesa Johnson
### ACCT 684: Professional Internship

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit</th>
<th>Contact Hour(s)</th>
<th>Lecture:</th>
<th>Lab:</th>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-3</td>
<td>1-6</td>
<td>0</td>
<td>0</td>
<td>0-3</td>
</tr>
</tbody>
</table>

**Repeatable for credit?**  
Yes  

**Number of times repeated for credit**  
- OR -  
**Maximum number of hours**  
3  

**When will this course be repeated?**  
Within a student's career  

- **CIP/Fund Code**  
5203010016  

- **Default Grade Mode**  
Satisfactory/Unsatisfactory (S)  

- **Method of instruction**  
Practicum  

- **Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)**  
No  

- **Will this course be taught as a distance education course?**  
No  

- **Is 100% of this course going to be taught in Texas?**  
Yes  

- **Will classroom space be needed for this course?**  
No  

This will be a required course or an elective course for the following programs:  

- **Required (select program)**  

- **Elective (select program)**  

### Course Syllabus

- **Syllabus:**  
Upload syllabus  

- **Upload syllabus**  
[ACCT 684 Syllabus.docx](#)  

- **Letters of support or other documentation**  
No  

- **Additional information**  
Updates made to course description, to allow this course to be repeatable (for cases of part-time internships the students complete over multiple semesters, change the maximum number of credit hours down to three, and to change the prerequisites of an Accounting major.  

- **Reviewer Comments**  
Terra Bissett (t.bissett) (07/17/18 1:25 pm): Minor edits made to course description to comply with catalog style guide.  

Terra Bissett (t.bissett) (07/17/18 1:26 pm): Rollback: Syllabus: Title – Professional Internship, Include link to Student Rule 7  

Terra Bissett (t.bissett) (07/20/18 8:35 am): Updates received.
ACCT 684: Professional Internship
Syllabus, Fall 2018

Instructor: Dr. Michael K. Shaub, CPA
Phone: (979) 845-8587
Email: ppa@mays.tamu.edu
Office: Wehner 487

Course Description: A directed internship in an organization to provide students with on-the-job training under the supervision of accounting professionals in organizational settings appropriate to the student's professional objectives. Full-time internships are a one semester program for each student participant. Part-time internships over multiple semesters are also accepted as long as course requirements are met each semester. Free elective only and must be taken on a satisfactory/unsatisfactory basis.

Prerequisites and Restrictions: Accounting major or approval of department head.

Course Objectives: The basic objectives for this course are to:

- A. Provide exposure to the structure, operations, and decision process within the organization without a commitment to permanent employer
- B. Offer the student an opportunity to assess abilities and interests in Accounting, thus assisting the student intern in choosing a specific career
- C. Develop business skills in a professional environment
- D. Increase confidence in dealing with supervisors

A successful internship will include: direct and regular guidance and supervision, direct access to a supervisor, meaningful projects and responsibilities that require accountability on the student’s part. Paid or unpaid internships are eligible.

Requirements: Students enrolled must do the following to earn credit for the internship.

- A. Submit the application for internship prior to the start of your internship. (This fulfills the Texas State Board of Public Accountancy* (hereafter CPA board)’s requirement listed in D below.)
- B. An Internship Information form should be submitted by the student’s HR representative or supervisor within 10 days of the start of the internship. (This fulfills the CPA board’s requirement listed in C below.)
- C. Maintain and submit a journal of the work experience. (This fulfills the CPA board’s requirement listed in E below.)

How you keep the journal is up to you, but students in the past have posted information in the journal on a daily or weekly basis or by client. You should include the following information:

1. Names of the clients (if you are required to maintain confidentiality, provide an alias for the client)
2. Include the dates of the client engagement.
3. Indicate what you worked on at each client (cash, financial statements, etc.)
4. Indicate the accounting knowledge you gained while working with this client.

Don’t go into too much detail. This should all be on a macro-sense.
D. Submit a report (at least two pages, typed and double-spaced) summarizing the internship experience. (This fulfills the CPA board’s requirement listed in F below.) The report should discuss the following:

1. *The general tasks the student performed on the job.*
2. *Accounting skills learned in academic courses which the student was able to apply to the work experience.*

*This report is due by December 1st. For those completing the internship later in the term, the deadline remains the same. For your records, continue to maintain your journal throughout the internship in case you are required to submit it for the CPA application.*

E. An evaluation of the student’s performance should be submitted by either the student’s HR representative or supervisor within 10 days of the completion of the internship. The student can also provide a copy of his/her final evaluation if preferred by the firm. (This fulfills the CPA board’s requirement listed in C below.)

F. Complete the end of internship survey. This electronic survey will be delivered through ecampus and gathers important information that the department must maintain for the CPA board.

*If you intend to sit for the CPA exam in a state other than Texas, it is your responsibility to research the requirements for being granted course credit for internships mandated by the board in that state. You are still required to complete the items listed in this syllabus as well, but you may also personally want to maintain additional information about your internship, if required by that agency.*

**Grading policies:** This course must be taken on a satisfactory/unsatisfactory basis. All required documentation must be submitted on time through eCampus. It is the student’s responsibility to ensure that all required documentation is submitted on time. As long as all requirements are met by established deadlines and the internship is successfully completed, students will receive a satisfactory grade in the course. All required documentation with due dates can be found below in the course schedule.

**Course Schedule:**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Due Date (due by 11:59 PM on the date listed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internship Application</td>
<td>August 27th</td>
</tr>
<tr>
<td>Internship Information Form</td>
<td>September 6th</td>
</tr>
<tr>
<td>Journal</td>
<td>December 1st</td>
</tr>
<tr>
<td>Internship Paper</td>
<td>December 1st</td>
</tr>
<tr>
<td>Evaluation</td>
<td>December 1st</td>
</tr>
</tbody>
</table>
**CPA Requirements:** Accounting internship courses must meet the following requirements to be recognized by the Texas State Board of Public Accountancy to receive credit for the CPA exam requirements.

A. The knowledge gained is equal to or greater than the knowledge gained in a traditional classroom setting.

B. The employing firm provides the faculty coordinator and the student with objectives to be met during the internship.

C. The employing firm provides an evaluation of the student at the conclusion of the internship, provides a letter describing the duties performed and the supervision to the student, and provides a copy of the documentation to the faculty coordinator and the student.

D. The internship is approved by the faculty advisor.

E. The student maintains a journal comprising a chronological list of all work experience gained in the internship.

F. The student writes a paper demonstrating the knowledge gained in the internship.

G. The student receives not more than 3 semester hours of credit for the internship (credit for only one internship will be granted by the board).

H. The student provides evidence of all items upon request by the board.

*All materials must be submitted through eCampus to earn credit for the internship course. Each student is required to maintain a copy of his/her paper and journal and final evaluation as these documents may be required by the CPA board when applying to take the CPA exam. If you are not provided a copy of your final evaluation, the Professional Program office will provide you an electronic copy upon request.*

**Make-up Policy:** If an absence is excused, the instructor will either provide the student an opportunity to make up any work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence. The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for the absence. Among the reasons absences are considered excused by the university are the following (see Student Rule 7 for details [http://student-rules.tamu.edu/rule07/](http://student-rules.tamu.edu/rule07/)). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code. 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. Accommodations sought for absences due to the observance of a religious holiday can be sought either prior or after the absence, but not later than two working days after the absence.

**Americans with Disabilities Act:** 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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu). If you have documentation of an accommodation, please provide notice during the first week of school of within one week of receiving a Disability Services letter (if it happens during the semester).
Academic Dishonesty:

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

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules
Course Change Request

Date Submitted: 05/16/18 9:42 am

Viewing: BAEN 622 : Unit Operations in Food Processing

Last edit: 05/16/18 9:42 am
Changes proposed by: ashleaschroeder

Catalog Pages referencing this course

BAEN - Biological & Ag. Engr.
Department of Biological and Agricultural Engineering

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashlea Schroeder</td>
<td><a href="mailto:aschroeder@tamu.edu">aschroeder@tamu.edu</a></td>
<td>979-845-0609</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix          BAEN    Course number  622
Department             Biological & Agricultural Eng
College/School         Agriculture & Life Sciences
Academic Level         Graduate
Effective term         2018-2019

Complete Course Title
Unit Operations in Food Processing

Abbreviated Course Title
UNIT OPNS IN FOOD PROC

Catalog course description

Unit Operations in Food Processing (2-2). Design of food process engineering systems; basic concepts of rheology and physical properties of foods; fundamentals of heat and mass transfer and process control.

Prerequisites and Restrictions

Fluid Mechanics, Thermodynamics, Fluid Dynamics.

Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslisted With No

Stacked with No

Semester 3 Contact Hour(s) (per week): 2 Lecture: 2 Lab: 2 Other: 0
Credit Hour(s) 4

Repeatable for credit? No

In Workflow
1. BAEN Department Head
2. Curricular Services Review
3. AG Committee Preparer GR
4. AG Committee Chair GR
5. AG College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
1. 05/16/18 9:57 am Stephen Searcy (ssearcy): Approved for BAEN Department Head
2. 05/16/18 1:27 pm Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 05/16/18 2:22 pm Dawn Kerstetter (dkersteer): Approved for AG Committee Preparer GR
4. 05/16/18 2:23 pm Dawn Kerstetter (dkersteer): Approved for AG Committee Chair GR
5. 05/16/18 2:24 pm Dawn Kerstetter (dkersteer): Approved for AG College Dean GR
6. 06/13/18 12:12 pm Meagan Kelly (meagankelly): Approved for GC Preparer
7. 07/20/18 4:23 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
<table>
<thead>
<tr>
<th><strong>CIP/Fund Code</strong></th>
<th>1403010006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Default Grade Mode</strong></td>
<td>Letter Grade (G)</td>
</tr>
<tr>
<td><strong>Method of instruction</strong></td>
<td>Laboratory</td>
</tr>
<tr>
<td> </td>
<td>Lecture</td>
</tr>
<tr>
<td> </td>
<td>Lecture and Laboratory</td>
</tr>
<tr>
<td><strong>Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Learning Outcomes</strong></td>
<td><strong>Meets traditional face-to-face learning outcomes.</strong></td>
</tr>
<tr>
<td><strong>Describe how learning outcomes are met or provide justification why they are not met.</strong></td>
<td>This course is taught using lecture capture technology. Students will be required to watch the lectures and complete the labs, as each traditional student does. Students will work with the instructor to turn in labs or take tests, online or in person (if capable).</td>
</tr>
<tr>
<td><strong>Hours</strong></td>
<td><strong>Meets traditional face-to-face hours.</strong></td>
</tr>
<tr>
<td><strong>Describe how hours are met or provide justification why they are not met.</strong></td>
<td>This course is taught using lecture capture technology. Students will be required to watch the lectures and complete the labs, as each traditional student does. The students will need to complete, at a minimum, 135 hours associated with this course.</td>
</tr>
<tr>
<td><strong>Will this course be taught as a distance education course?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Is 100% of this course going to be taught in Texas?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Will classroom space be needed for this course?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>This will be a required course or an elective course for the following programs:</strong></td>
<td></td>
</tr>
<tr>
<td>Required (select program)</td>
<td></td>
</tr>
<tr>
<td>Elective (select program)</td>
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</tbody>
</table>

**Course Syllabus**

<table>
<thead>
<tr>
<th><strong>Syllabus:</strong></th>
<th>Upload syllabus</th>
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</thead>
<tbody>
<tr>
<td><strong>Upload syllabus</strong></td>
<td>BAEN 622.pdf</td>
</tr>
<tr>
<td><strong>Letters of support or other documentation</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td></td>
</tr>
</tbody>
</table>
Reviewer Comments

David W. Reed (dwreed) (05/14/18 2:18 pm): Rollback: Please update syllabus with required calendar of activities with 135 hours listing (for Dr. Fernando)
BAEN - 622 Unit Operations in Food Processing  
Fall 2018  
Lecture: Monday & Wednesday, 10:20 to 11:10 a.m – Jack E Brown 108  
Lab/Lecture: Friday, 10:20 to 12:00 p.m. – Some Labs will be Scoates Hall, 214 and 144

Course Description and Prerequisites

Design of food process engineering systems; basic concepts of rheology and physical properties of foods; fundamentals of heat and mass transfer and process control. **Prerequisites:** Fluid Mechanics, Thermodynamics, Fluid Dynamics

Course Objectives

The objectives of this course are to give students a basic understanding of food processing, concepts of physical properties of biological materials, application of heat, mass, and momentum transfer to food processing systems, and the ability to analyze and design food equipment for transporting fluid foods (non-Newtonian fluids) and for cooling, freezing, and frying of agricultural and food products.

Instructor Information

Name: Dr. Rosana Moreira  
Telephone number: 979-847-8794  
Email address: rmoreira@tamu.edu  
Office hours: By appointment  
Office location: 310 Scoates Hall

Textbook and/or Resource Material


Grading Policies

<table>
<thead>
<tr>
<th>Grading</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20 % 90 – 100: A</td>
</tr>
<tr>
<td>Lab reports</td>
<td>20 % 80 – 89: B</td>
</tr>
<tr>
<td>Midterms</td>
<td>40 % 70 – 79: C</td>
</tr>
<tr>
<td>Final</td>
<td>20% 60 – 69: D</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grading</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below 60: F</td>
</tr>
</tbody>
</table>

**Student contact hours:** 45 for face-to-face vs 135 hrs for distance delivery for a 3 credit hour course. The 135 hrs for distance delivery will consist of watching lecture recordings and other demonstrations, reading and homework assignments, online discussions and other Q&A forums, chatting with class instructor, and project discussions.
Attendance: If a lab absence is unexcused, the student will receive a grade of zero for that entire lab exercise. Students who miss class due to an excused absence should work with the instructor to make up any missed work. Excuses for emergency absences must be reported to the instructor as soon as possible, but not more than one week after the return to class. See University Rules for a full statement of the University attendance policy at http://student-rules.tamu.edu/rule7.htm.

Homework: Assigned problems must be completed by the start of the following class period and will be collected by the instructor. Restate the problem, and then work the problem in a neat, logical manner and box final answers (include units). If there are multiple pages please staple them and include your name, problem set number and date at the top of the first page. **Incomplete assignments will not be accepted and given a zero grade.** Late homework will not be accepted unless the student has a University excused absence for the class period in which homework was scheduled for completion. If any assignments are turned in outside of class, you may hand it either directly to the instructor or to the Teaching Assistant. **Do not put assignments in the offices or slide them under the doors of the instructor or T.A.**

Instructor will work with those students enrolled in the course via Distance Education programs to determine appropriate assignment due dates.

Lab rules: For your safety, you should wear appropriate shoes (no flip-flops) and listen to the instructor or the T.A. when they explain the laboratory procedures. Make sure you understand them. You will be asked to sign a sheet stating that you have understood the rules. Late laboratory reports will not be accepted.

Instructor will work with those students enrolled in the course via Distance Education programs to determine appropriate lab assignment due dates.

Exams: There will be two in-class exams during the semester and a final exam (that may be optional). Each exam will contain material covered in lecture, lab, assignments, and homework. Make up exams will only be given for students with a certified medical excuse or prior instructor approval.

Instructor will work with those students enrolled in the course via Distance Education programs to determine appropriate exam dates.

**This course has been assigned three credit hours based upon the work represented by verifiable achievement of institutionally established learning outcomes, direct faculty instruction, and academically engaged time. (Federal Rule GEN 11-06)**

**Coursework Copyright Statement (Texas A&M University Policy Statement):** The handouts used in this course are copyrighted. By "handouts," this means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, homework, lab problems, in-class materials, weekly news, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy them, unless you are expressly granted permission.

As commonly defined, plagiarism consists of passing off as one’s own the ideas, words, writing, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions about plagiarism and/or copying, please consult the latest issue of the *Texas A&M University Student Rules*, under the section "Scholastic Dishonesty."
Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Contact Hours for DE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, food chemistry</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Food chemistry</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>Food rheology</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Pipeline design</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>Pipeline design, exam</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Heat transfer (review)</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Thermal processing</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>Thermal processing</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>Freezing, exam</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Freezing</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>Drying of foods</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>Drying of foods</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>Deep-fat frying, exam</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>Deep-fat frying</td>
<td>9</td>
</tr>
<tr>
<td>15</td>
<td>Final Exam</td>
<td>9</td>
</tr>
</tbody>
</table>

Total hours 135

Other Pertinent Course Information

**University Regulations:** You are reminded of the following university regulations:

1. It is the responsibility of the student to be sure that course prerequisites are met (TAMU Reg 3).
2. Class attendance is an individual student responsibility (TAMU Reg 15).
3. Classroom behavior will be maintained to insure the rights of all students to learn (TAMU Reg. 40).
4. If you have a disability which may require alternate accommodations related to the requirements of this course, please inform the instructor and/or make an appointment with the instructor so that necessary alternative arrangements can be made.
5. It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty (TAMU Reg 39).

**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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

**Academic Integrity**

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

For many years, Aggies have followed a Code of Honor in an effort to unify the aims of all Aggies toward a high code of ethics and dignity. It functions as a symbol to all Aggies, promoting understanding and loyalty to truth and confidence in each other. Students should refer to the University policy on academic integrity found in the Honor Council website: All violations will be handled as specified by University Guidelines.

*Aggies do not lie, cheat or steal; nor do they tolerate those who do.*
Course Change Request

Date Submitted: 05/16/18 12:57 pm

Viewing: BAEN 625: Advances in Food Process Engineering

Last edit: 05/16/18 2:11 pm
Changes proposed by: asleaschroeder

Catalog Pages referencing this course

BAEN - Biological & Ag. Engr.
Department of Biological and Agricultural Engineering

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashlea Schroeder</td>
<td><a href="mailto:aschroeder@tamu.edu">aschroeder@tamu.edu</a></td>
<td>979-845-0609</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are to meet the demand/interest of students.

Course prefix BAEN Course number 625
Department Biological & Agricultural Eng
College/School Agriculture & Life Sciences
Academic Level Graduate
Academic Level (alternate) Undergraduate
Effective term 2018-2019

Complete Course Title
Advances in Food Process Engineering

Abbreviated Course Title
ADV IN FOOD PROCESS ENGR

Catalog course description
Application of engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration.

Prerequisites and Restrictions
Graduate classification.

Concurrent Enrollment No
Should catalog prerequisites / concurrent enrollment be enforced? No
Crosslistings No Crosslisted With
Stacked No Stacked with

Approval Path
1. 05/16/18 1:05 pm Stephen Searcy (ssearcy): Approved for BAEN Department Head
2. 05/16/18 2:11 pm Terra Bisse (t.bisse): Approved for Curricular Services Review
3. 05/16/18 2:21 pm Dawn Kerstetter (dkersterter): Approved for AG Committee Preparer GR
4. 05/16/18 2:23 pm Dawn Kerstetter (dkersterter): Approved for AG Committee Chair GR
5. 05/16/18 2:24 pm Dawn Kerstetter (dkersterter): Approved for AG College Dean GR
6. 06/13/18 12:12 pm Meagan Kelly (meagankelly): Approved for GC Preparer
7. 07/20/18 4:23 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
### BAEN 625: Advances in Food Process Engineering

**Semester:** 3  
**Credit Hour(s):** (per week): 3  
**Contact Hour(s):**  

**Lecture:** 3  
**Lab:** 0  
**Other:** 0  
**Total:** 3

**Repeatable for credit?** No  
**Three-peat?** No  
**CIP/Fund Code:** 1403010006

**Default Grade Mode:** Letter Grade (G)  
**Alternate Grade Modes:** Satisfactory/Unsatisfactory  
**Method of instruction:** Lecture  
**Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)** Yes

#### Learning Outcomes
Meet traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

The DE students will watch the recorded lectures and complete all requirements that in-class participation is required to complete.

#### Hours
Meet traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

The 135 hrs for distance delivery will consist of watching lecture recordings and other demonstrations, reading and homework assignments, online discussions and other Q&A forums, chatting with class instructor, and project discussions.

Will this course be taught as a distance education course? Yes No

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

**Required (select program):**

**Elective (select program):**

- (MS-AGSM) Master of Science in Agricultural Systems Management
- (MS-BAEN) Master of Science in Biological and Agricultural Engineering
- (PHD-BAEN) Doctor of Philosophy in Biological and Agricultural Engineering
- (MEN-BAEN) Master of Engineering in Biological and Agricultural Engineering
# Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload syllabus</td>
<td>[BAEN 625.pdf]</td>
</tr>
</tbody>
</table>

Letters of support or other documentation: No

Additional information:

Reviewer Comments:

Reported to state?

Key: 1752
BAEN - 625 Advances in Food Process Engineering
Fall 2018
Lecture: MWF 8-8:50am; SCTS 215 (lectures will be recorded for DE students)

Course Description and Prerequisites

Application of engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration

Course Objectives

The objectives of this course are to introduce to students the newest advances in food processing technology with emphasis on measurement and prediction of food material properties, predictive and kinetic modeling for food safety and food quality applications, and nonthermal processing technologies.

Instructor Information

Name Dr. Rosana Moreira; Dr. Elena Castell
Telephone number 979-847-8794; 979-862-7645
Email address rmoreira@tamu.edu; ecastell@tamu.edu
Office hours Open door policy and via e-mail or Skype for Distance Education students
Office location 310 Scoates Hall; 311 Scoates Hall

Textbook and/or Resource Material

No textbook is required for this class. Class notes, slides and other materials used in the course will be made available electronically through the Elearning course website. In addition, a link will give students access to recordings of all lectures for the semester.

Grading Policies

Each instructor will assign and grade their own assignments and exams. The grades earned for each component will be collated across instructors to determine a final grade for the course. Each instructor may have their own requirements as far as assignments and exams are concerned.

<table>
<thead>
<tr>
<th>Grading</th>
<th>Grading Scale</th>
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</thead>
<tbody>
<tr>
<td>Assignments</td>
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</tr>
<tr>
<td>Project/Paper Presentation</td>
<td>25%</td>
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<tr>
<td>Exams</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>90 – 100: A</td>
</tr>
<tr>
<td></td>
<td>80 – 89: B</td>
</tr>
<tr>
<td></td>
<td>70 – 79: C</td>
</tr>
<tr>
<td></td>
<td>60 – 69: D</td>
</tr>
<tr>
<td></td>
<td>Below 60: F</td>
</tr>
</tbody>
</table>
**Homework:** Late homework will not be accepted unless the student has a University excused absence for the class period in which homework was scheduled for completion. If any assignments are turned in outside of class, you should hand it directly to the instructor. Do not put assignments in the offices or slide them under the door of the instructor. Incomplete assignments will receive a zero grade.

*Instructors will work with those students enrolled in the course via Distance Education programs to determine appropriate assignment due dates.*

Excuses for emergency absences must be reported to the instructor as soon as possible, but not more than one week after the return to class. See University Rules for a full statement of the University attendance policy at [http://student-rules.tamu.edu/rule7.htm](http://student-rules.tamu.edu/rule7.htm).

**Exams** There will be at least three 50-minute in-class exams during the semester. Each exam will contain material covered by each instructor. Each instructor will decide whether to give exams. Make up exams will only be given for students with a certified medical excuse or prior instructor approval.

*Instructors will work with those students enrolled in the course via Distance Education programs to determine appropriate exam dates.*

*This course has been assigned three credit hours based upon the work represented by verifiable achievement of institutionally established learning outcomes, direct faculty instruction, and academically engaged time. (Federal Rule GEN 11-06)*

**Design Project and Paper:** Graduate students will write a 10-page research paper on a specified topic. A list of the references cited in the pages must be added and these pages will not count as one of the 10 pages. Please number all the pages.

The suggested format for the paper is: (a) Introduction (a brief description of the problem and its relevance to food packaging. (b) Design (a detailed discussion of the design, problem to solve, calculations, including citations) followed by the citation reference. (c) A list of References cited in the body of the paper.

The term paper will be graded as follows: (100% = 100 pts.)

1. Paper format 5%
2. Introduction 20%
3. Design (body of paper) 70%
4. References 5%

Students will give an oral Power Point presentation of their work during the last two weeks of classes. Presentations should last 10-15 minutes and should be sent via email to the class instructor the day before their presentation so that they could be loaded into the computer in the classroom prior to the class time. Presentations will be graded by the class instructor based on quality of the slides, technical content, and delivery. Peers will provide constructive criticism by filling out a survey after the presentations. *Instructors will make arrangements with those students enrolled via the Distance Education program regarding delivery of the presentation.*

**Plagiarism:** As commonly defined, plagiarism consists of passing off as one’s own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you directly copy the work of another person and turn it in as your own, even if you have the permission of that person.

If you have any questions regarding plagiarism or cheating, please consult the Texas A&M University Student Rules, under the section Scholastic Dishonesty. These procedures will be followed and enforced in this course to maintain an environment of academic honesty.
Course Topics, Calendar of Activities, Major Assignment Dates

Below is a tentative calendar with corresponding instructor. The schedule may be modified.

<table>
<thead>
<tr>
<th>Week</th>
<th>Instructor</th>
<th>Notes</th>
<th>Contact Hours for DE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Castell</td>
<td>Engineering Properties of Foods</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Castell</td>
<td>Engineering Properties of Foods</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
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<td>Engineering Properties of Foods</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Castell</td>
<td>Properties prediction - modeling</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>Castell</td>
<td>Properties prediction - modeling</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Castell</td>
<td>Properties prediction - modeling</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Moreira</td>
<td>Nonthermal processes</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>Moreira</td>
<td>Nonthermal processes</td>
<td>9</td>
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<td>9</td>
<td>Moreira</td>
<td>Nonthermal processes</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Moreira</td>
<td>Food safety - modeling</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>Moreira</td>
<td>Food safety - modeling</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>Castell</td>
<td>Shelf life and kinetics</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>Castell</td>
<td>Shelf life and kinetics</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>Castell/Moreira</td>
<td>Student presentations</td>
<td>9</td>
</tr>
<tr>
<td>15</td>
<td>Castell/Moreira</td>
<td>Student presentations</td>
<td>9</td>
</tr>
</tbody>
</table>

Total Hours 135

TENTATIVE CLASS TOPIC OUTLINE

I –ENGINEERING PROPERTIES OF FOODS – Instructor: Castell

1. Properties of relevance to food engineers and scientists
   2. Measurement
   3. Prediction and modeling

II –FOOD SAFETY ENGINEERING – Instructor: Moreira

1. Introduction
   2. Thermal and non-thermal processes
   3. Predictive modeling
   4. Other

III –OTHER RELEVANT TOPICS – Instructor: Castell

1. Shelf life and kinetics
   2. Modeling

Student contact hours: 45 for face-to-face vs 135 hrs for distance delivery for a 3 credit hour course. The 135 hrs for distance delivery will consist of watching lecture recordings and other demonstrations, reading and homework assignments, online discussions and other Q&A forums, chatting with class instructor, and project discussions.
Other Pertinent Course Information

University Regulations: You are reminded of the following university regulations:
1. It is the responsibility of the student to be sure that course prerequisites are met (TAMU Reg 3).
2. Class attendance is an individual student responsibility (TAMU Reg 15).
3. Classroom behavior will be maintained to insure the rights of all students to learn (TAMU Reg. 40).
4. If you have a disability which may require alternate accommodations related to the requirements of this course, please inform the instructor and/or make an appointment with the instructor so that necessary alternative arrangements can be made.
5. It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty (TAMU Reg 39).

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity

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

For many years, Aggies have followed a Code of Honor in an effort to unify the aims of all Aggies toward a high code of ethics and dignity. It functions as a symbol to all Aggies, promoting understanding and loyalty to truth and confidence in each other. Students should refer to the University policy on academic integrity found in the Honor Council website: All violations will be handled as specified by University Guidelines.

Aggies do not lie, cheat or steal; nor do they tolerate those who do.
Course Change Request

Viewing: CPSY 602: School Counseling Theories and Techniques for School Counselors

Last approved: 06/12/18 3:28 am
Last edit: 06/21/18 9:52 am
Changes proposed by: gbyrns

Catalog Pages referencing this course
- CPSY - Counseling Psychology
- Department of Educational Psychology

Faculty Senate Number: FS.36.002

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glenda Byrns</td>
<td><a href="mailto:gbyrns@tamu.edu">gbyrns@tamu.edu</a></td>
<td>9798622289</td>
</tr>
</tbody>
</table>

Rationale for Course
Edit
The proposed changes are part of a routine curriculum review.

Course prefix: CPSY
Course number: 602
Department: Educational Psychology
College/School: Education & Human Development
Academic Level: Graduate
Academic Level (alternate): Undergraduate

Complete Course Title:
School Counseling Theories and Techniques for School Counselors

Abbreviated Course Title:
COUNS TECH FOR SCH CNSLRS SCHOOL CNSL TECH

Catalog course description:
Broad view of counseling theories and techniques using a microskills approach; modules include topics pertinent to the school counseling field; opportunities to observe and practice counseling techniques.

Prerequisites and Restrictions:
- CPSY 630; graduate classification; approval of department head.

Concurrent Enrollment:
No

Should catalog prerequisites / concurrent enrollment be enforced?
Yes

In Workflow
1. EPSY Department Head
2. Curricular Services Review
3. ED Committee Preparer GR
4. ED Committee Chair GR
5. ED College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
1. 06/18/18 4:40 pm Shanna Hagan-Burke (shaganburke): Approved for EPSY Department Head
2. 06/21/18 9:54 am Terra Bissett (t.bissett): Approved for Curricular Services Review
3. 06/21/18 10:29 am Melanie Robideau (mrobideau): Approved for ED Committee Preparer GR
4. 07/20/18 10:45 am Beverly Irby (irbyb): Approved for ED Committee Chair GR
5. 07/20/18 10:46 am Beverly Irby (irbyb): Approved for ED College Dean GR
6. 07/31/18 12:51 pm Meagan Kelly (meagankelly): Approved for GC Preparer
7. 08/13/18 3:04 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair

History
1. Jun 12, 2018 by Glenda Byrns (gbyrns)
Enforced Prerequisites / Concurrent Enrollment

<table>
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<tr>
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<th>Min Grade/Score</th>
<th>Academic Level</th>
<th>Concurrency?</th>
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<tbody>
<tr>
<td>Crosslisted With</td>
<td>CPSY 630</td>
<td>D</td>
<td>UG</td>
<td></td>
</tr>
</tbody>
</table>

Semester: 3  
Credit Hour(s): 3  
Contact Hour(s): Lecture: 3  
Lab: 0  
Other: 0  
Total: 3  
Repeatable for credit?: No  
Three-peat?: No

CIP/Fund Code: 1311010004  
Default Grade Mode: Leer Grade (G)  
Alternate Grade Modes: Satisfactory/Unsatisfactory  
Method of instruction: Lecture  
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education): Yes

Learning Outcomes  
Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.  
This course is equivalent to a face-to-face course

Hours  
Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.  
Course Activity Face-to-Face Course Equivalent CPSY 602 700  
Testing Weekly Quizzes Weekly Quizzes  
Testing Final Exam Final Exam  
Written Assignment Theory Paper Reflection Papers  
Student-Instructor Interaction Class Participation Microskills Demonstration Feedback

The instructor provides individualized feedback to students throughout the semester. In-depth individualized feedback is given on their counseling microskills demonstration videos. In terms of out of class student work, the assignments are expected to take a minimum of 2 hours to complete on a weekly basis. Further, the workload requirements of the various course activities reflect that of the face-to-face course equivalent.

Will this course be taught as a distance education course? Yes

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this Yes
This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus: 602_Syllabus_theories_techniques.docx

Letters of support or other documentation: No Yes

Additional information

Reviewer Comments: Terra Bissett (t.bissett) (06/21/18 9:51 am): Syllabus is not required for this type of change. Please note: this course was previously approved for Non-traditional Format.

Reported to state? No Change
MEMORANDUM

TO: Mr. Michael K. Young
President

THROUGH: Dr. Carol A. Fierke
Provost and Executive Vice President

FROM: Dr. Michael Benedik
Vice Provost and Chief International Officer

SUBJECT: May 14, 2018 Faculty Senate Items

All of the attached May 2018 Faculty Senate items have been reviewed and approved by college, university curriculum, Faculty Senate and Office of the Provost.

New Course Requests, Course Change Requests, Course Withdrawal Requests, and Change in Curriculum Requests
Approval recommended. FS.36.001; FS.36.002; FS.36.003; FS.36.011; FS.36.012; FS.36.014; FS.36.019; FS.36.020.

FS.36.004: Recommend approval. College of Engineering, Department of Civil Engineering, Master of Science in Civil Engineering. Request to change SCHs from 32 to 30.
External action: Submit Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.005: Recommend approval. College of Engineering, Department of Engineering, Master of Science in Interdisciplinary Engineering. Request to change SCHs from 32 to 30.
External action: Submit Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.006: Recommend approval. College of Engineering, Department of Materials Science and Engineering, MS in Materials Science and Engineering. Request to change SCHs from 32 to 30.
External action: Submit Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.007: Recommend approval. College of Engineering, Department of Engineering, Master of Science in Safety Engineering. Request to change SCHs from 32 to 30.
External action: Submit Request to Change Semester Credit Hours form to the System for THECB approval.


FS.36.013: Recommend approval. College of Liberal Arts, Department of Liberal Arts, Leadership – Minor. The THECB/SACSCOC does not track minors. No external action.

FS.36.015: Recommend approval. College of Dentistry, Dental Public Health – Certificate. SCH change from 3.0 to 24.0 to meet the recommendations made during a site visit from the Commission on Dental Accreditation. **External action:** Submit a Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.016: Recommend approval. College of Dentistry, Oral and Maxillofacial Pathology – Certificate. SCH change from 30.0 to 40.0 to more accurately reflect the actual time spent by the student in the learning experience and to maintain consistent SCHs semester to semester. **External action:** Submit a Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.017: Recommend approval. College of Dentistry, Pediatric Dentistry – Certificate. SCH change from 48.0 to 48.5 updates curriculum to give the same credit hours as all clinical students earn for taking OBIO 630, Growth and Mechanisms of Development. **External action:** Submit a Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.018: Recommend approval. College of Dentistry, Master of Science in Oral Biology. SCH change from 89.0 to 32.0. Request for change to correct an error on the inventory hours. **External action:** Submit a Request to Change Semester Credit Hours form to the System for THECB approval.

FS.36.021: Recommend approval. Proposed Revisions to Student Rule 8.2.4 Examinations. The change eliminates scheduling limitations for professional program final exams. No concerns with change.

FS.36.022: Recommend approval. Student Rule 20.1.2.3.8 Violation of College, Program, Departmental or Course Rules. Verbiage addition “students may not violate any announced college, program, departmental or course rules that are in compliance with other student rules relating to academic matters”. No concerns with change.
FS.36.023: Recommend approval. Student Rule 28 Student Conduct Files and Records. Change in language is consistent with the rest of the Student Rules regarding the use and meaning of “complainant” rather than “survivor”. No concerns with change.

FS.36.024: Recommend review. Approved number of total graduates for Texas A&M University, Doctor of Veterinary Medicine, Texas A&M University at Galveston, Texas A&M University at Qatar and the Texas A&M University Health Science Center.

Attachments
Course Change Request

Viewing: CSCE 638: Natural Language Processing: Foundations and Techniques

Last approved: 06/18/17 3:18 am
Last edit: 04/09/18 6:40 pm

Changes proposed by: smilingsheila

Catalog Pages referencing this course

- CSCE - Computer Sci. & Engr.
- Department of Computer Science and Engineering

Faculty Senate Number: FS.34.285

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheila Dotson</td>
<td><a href="mailto:dotson@tamu.edu">dotson@tamu.edu</a></td>
<td>979-845-6176</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are to meet the demand/interest of students.

Course prefix: CSCE  
Course number: 638

Department: Computer Science & Engineering
College/School: College of Engineering
Academic Level: Graduate
Academic Level (alternate): Undergraduate

Effective term: 2019-2020 2017-2018

Complete Course Title: Natural Language Processing: Foundations and Techniques

Abbreviated Course Title: NLP FOUNDATIONS & TECH

Catalog course description:
Focus on teaching Natural Language Processing (NLP) fundamentals including language models, automatic syntactic processing and semantic understanding; introduction to major NLP applications including information extraction, machine translation, text summarization, dialogue systems and sentiment analysis.

Prerequisites and Restrictions: CSCE 221

Concurrent Enrollment: No
Should catalog prerequisites be applied: Yes

Approval Path

1. 04/09/18 3:44 pm Scott Schaefer (schafer): Approved for CSCE Department Head
2. 04/09/18 6:41 pm Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 04/18/18 11:01 am Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 04/25/18 2:17 pm Harry Hogan (h-hogan): Approved for EN Committee Chair GR
5. 04/25/18 2:19 pm Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 06/13/18 12:12 pm Meagan Kelly (meagankelly): Approved for GC Preparer
7. 07/20/18 4:23 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair

History

1. Jun 18, 2017 by smilingsheila

https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate
Enforced Prerequisites / Concurrent Enrollment

<table>
<thead>
<tr>
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<th>Course Prefix/Number</th>
<th>Min Grade/Score</th>
<th>Academic Level</th>
<th>Concurrency?</th>
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<tr>
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<td>CSCE 221</td>
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<td>UG</td>
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Crosslistings: No
Crosslisted With:

Stacked: No
Stacked with:

Semester: 3
Credit Hour(s): 3
Contact Hour(s) (per week):
Lecture: 3
Lab: 0
Other: 0
Total: 3
Repeatable for credit: No
Three-peat: No
CIP/Fund Code: 1107010006
Default Grade Mode: Letter Grade (G)
Alternate Grade Modes: Satisfactory/Unsatisfactory
Method of instruction: Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) No

Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MS-CPSC) Master of Science in Computer Science</td>
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<tr>
<td>(MS-ELEN) Master of Science in Electrical Engineering</td>
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<tr>
<td>(MS-CECN) Master of Science in Computer Engineering</td>
</tr>
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<td>(MS-CEEN) Master of Science in Computer Engineering</td>
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Course Syllabus

Syllabus: Upload syllabus
Upload syllabus: syllabus_spring17_nlp_v3.doc
<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information</td>
<td>Since CSCE 638 is a graduate course, very few graduate students have the prerequisite and cannot register for the course. Removing prerequisite of CSCE 221.</td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td></td>
</tr>
<tr>
<td>Reported to state?</td>
<td>No</td>
</tr>
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</table>

Key: 17451
Course Change Request

Date Submitted: 04/09/18 11:27 am

Viewing: **CSCE 702 : Law and Policy in Cybersecurity**

Also listed as: **CYBR 602**

Last approved: 03/14/18 3:24 am

Last edit: 04/12/18 3:07 pm

Changes proposed by: smilingsheila

<table>
<thead>
<tr>
<th>Contact(s)</th>
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<th>Phone</th>
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<tr>
<td></td>
<td>Sheila Dotson</td>
<td><a href="mailto:dotson@tamu.edu">dotson@tamu.edu</a></td>
<td>979-845-6176</td>
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<tr>
<td></td>
<td>Daniel Ragsdale</td>
<td><a href="mailto:rags@tamu.edu">rags@tamu.edu</a></td>
<td>979-845-7398</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

*The proposed changes are to meet the demand/interest of students.*

Course prefix: CSCE  Course number: 702

Department: Computer Science & Engineering

College/School: College of Engineering

Academic Level: Graduate

Effective term: 2018-2019

Complete Course Title: Law and Policy in Cybersecurity

Abbreviated Course Title: LAW & POLICY IN CYBERSECURITY

Catalog course description:

Law and policy issues related to cybersecurity including procurement, operations, maintenance, governance, oversight, protection, defense; analyze law, policies, and regulations domestically and globally.

Prerequisites and Restrictions:

Graduate classification.

Concurrent Enrollment: No

Should catalog prerequisites: No

Catalog Pages referencing this course:

  CYBR - Cybersecurity
  Department of Computer Science and Engineering
- CYBR 602: CSCE - Computer Sci. & Engr.
  CYBR - Cybersecurity
  Department of Computer Science and Engineering

Faculty Senate Number: **FS.35.153**

Approval Path

1. 04/09/18 3:45 pm
   Scott Schaefer (schaefer): Approved for CSCE Department Head

2. 04/12/18 1:37 pm
   Tim Jacobs (tjacobs): Approved for CLEN Department Head

3. 04/12/18 3:07 pm
   Sandra Williams (sandra-williams): Approved for Curricular Services Review

4. 04/18/18 11:02 am
   Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR

5. 04/25/18 2:17 pm
   Harry Hogan (h-hogan): Approved for EN Committee Chair GR

6. 04/25/18 2:19 pm
   Harry Hogan (h-hogan): Approved for EN College Dean GR

7. 06/13/18 12:12 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer

8. 07/20/18 4:23 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair

https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate
Does concurrent enrollment need to be enforced?

Crosslistings
- Yes
- Crosslisted With CYBR 602

Stacked
- Yes
- Stacked with

Semester: 3
Credit Hour(s): 3

Contact Hour(s)
- Lecture: 3
- Lab: 0
- Other: 0
- Total: 3

Repeatability for Credit
- No

Three-peat
- No

CIP/Fund Code: 1110030006

Default Grade Mode: Letter Grade (G)

Alternate Grade Modes: Satisfactory/Unsatisfactory

Method of Instruction
- Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)
- Yes

Learning Outcomes
- Meets traditional face-to-face learning outcomes.
- Meets traditional face-to-face hours.

Hours
- Meets traditional face-to-face hours.

Will this course be taught as a distance education course?
- Yes

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.
- Yes

Is 100% of this course going to be taught in Texas?
- Yes

Will classroom space be needed for this course?
- Yes

This will be a required course or an elective course for the following programs:

**Required (select program)**

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MEN-ENGR) Master of Engineering in Engineering</td>
</tr>
</tbody>
</table>

**Elective (select program)**

<table>
<thead>
<tr>
<th>Program(s)</th>
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<tbody>
<tr>
<td>(MS-CPSC) Master of Science in Computer Science</td>
</tr>
<tr>
<td>(CERT-CYBE) Certificate in Cybersecurity Engineering</td>
</tr>
<tr>
<td>(CERT-CYBP) Certificate in Cybersecurity Policy</td>
</tr>
</tbody>
</table>
# Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><a href="csce702-raes.doc">csce702-raes.doc</a></td>
</tr>
<tr>
<td></td>
<td>[Law and Policy CSCE 702 WEB.pdf](Law and Policy CSCE 702 WEB.pdf)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>Yes</th>
</tr>
</thead>
</table>

| Additional information | To be offered distance Fall 2018. |

<table>
<thead>
<tr>
<th>Reviewer Comments</th>
<th></th>
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<td></td>
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<thead>
<tr>
<th>Reported to state?</th>
<th>Add</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

**Key:** 18390
Course title and number: CSCE 702/CYBR 602: Law and Policy in Cybersecurity

Course Description and Prerequisites

Law and Policy in Cybersecurity. Credits 3. (3-0). Law and policy issues related to cybersecurity including procurement, operations, maintenance, governance, oversight, protection, defense; analyze law, policies, and regulations domestically and globally. Prerequisites: Graduate classification or approval of instructor. Cross-listed with CYBR 602/CSCE 702

Learning Outcomes or Course Objectives

At the end of this course, the student should be able to:

- Acquire the common body of knowledge for law and policy in cybersecurity to include terminology, concepts, and specific legal terminology related to domestic and international laws codifying cybersecurity concepts.
- Apply legal concepts in issues related to cybersecurity including cases and controversies unique to cybersecurity.

Synthesize an action plan through analyzing cybersecurity legal and policy knowledge issues to create an action plan.

Instructor Information

Name: Paula S. deWitte
Telephone number: 979.845.7398
Email address: Paula.dewitte@tamu.edu
Office hours: TBD
Office location: TBD

Textbook and/or Resource Material

Required Textbook
Course materials will be provided to the class.

Grading Policies

The student’s semester grade will be based on lab assignments, exams, and class attendance. Class attendance is essential for student success; therefore, students are required to promptly and regularly attend all their classes. A record of attendance will be maintained from the first day of classes and/or the first day the student’s name appears on the roster through final examinations and will constitute the participation grade for the course. Absences may only be excused as defined by the Texas A&M University Student Rules available at http://student-rules.tamu.edu/rule07.
Grading Scale – CSCE 476

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points:</th>
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</thead>
<tbody>
<tr>
<td>Assignments (short weekly or bi-weekly papers)</td>
<td>300</td>
</tr>
<tr>
<td>Papers (semester on approved topics)</td>
<td>200</td>
</tr>
<tr>
<td>Midterm</td>
<td>200</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
<tr>
<td>Class Participation</td>
<td>100</td>
</tr>
</tbody>
</table>

Grading Scale – CSCE 702

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<th>Points:</th>
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<tbody>
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<td>Assignments (short weekly or bi-weekly papers)</td>
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<tr>
<td>Papers (semester on approved topics)</td>
<td>300</td>
</tr>
<tr>
<td>Current Events Case Study</td>
<td>200</td>
</tr>
<tr>
<td>Midterm</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
</tbody>
</table>

Points Grading Scale:
Out of 1000 assignable points
A = 900-1000 points
B = 800-899 points
C = 700-799 points
D = 600-699 points
F = <600 points

Course Topics, Calendar of Activities, Major Assignment Dates
(subject to change as necessary)

<table>
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<tr>
<th>Date</th>
<th>Topics</th>
<th>Assignment Milestones</th>
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<tbody>
<tr>
<td>Week 1 – 1</td>
<td>Introduction to Course &amp; Expectations; Discussion of Semester Paper; Fundamentals and Basics of Law: Differences between engineering/legal mindset; “It depends;” Jurisdiction, Standing; Venue; Case/Controversy</td>
<td>Write a one-to-two page paper on a fundamental legal issue as being confusing/critical to cybersecurity; Due class session 2-2. 5% of course grade.</td>
</tr>
<tr>
<td>Week 1 - 2</td>
<td>Fundamentals and Basics of Law: Statute of Limitations; Evidence Standards (Civil vs Criminal); Remedies/Damages; “Reasonableness standards,” Civil contract vs Civil tort; Conflict of laws;</td>
<td></td>
</tr>
<tr>
<td>Week 2 – 1</td>
<td>2002 Homeland Security Act (FISMA)/NIST Standards:</td>
<td></td>
</tr>
<tr>
<td>Week 2- 2</td>
<td>Applying NIST Standards in a Legal Sense:  Documentation and how applying good practices may cause legal risk!</td>
<td>Write a one-to-two page paper on a specific NIST family of controls (pick out one or two controls) and think through any legal issues that should be considered. Due class session 3-2. 5% of course grade.</td>
</tr>
<tr>
<td>Week 3 – 1</td>
<td>Presidential Directives related to Cybersecurity and how enforced</td>
<td>702 current events case study assigned for topic formulation</td>
</tr>
<tr>
<td>Week 3 – 2</td>
<td>Presidential Directives related to Securing Critical Infrastructure and Patriot Act</td>
<td>Research a legal issue related to protecting critical infrastructure from one of the SSAs and write a one-to-two page paper on summarizing that legal issue (after class discussion). Due in class session 4-2. 5% of course grade.</td>
</tr>
<tr>
<td>Week 4 – 1</td>
<td>Regulatory Agencies (FTC, FCC, SEC, CFPB, DHS, Dept of Education and their authorities; other financial/banking regulations</td>
<td>702 current events case study topics approved.</td>
</tr>
<tr>
<td>Week 4 - 2</td>
<td>Scope and effect of Federal regulations and how enforced; the Yates Memo</td>
<td>Select a federal agency and spend time researching that agency’s current cybersecurity regulations (eliminating those discussed in class). Are there regulations that could be interpreted to include cybersecurity? Write a one to page paper summarizing your findings. Due class session 5-2. 5% of course grade. Semester Papers assigned.</td>
</tr>
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<td>Week 6 – 1</td>
<td>State Laws &amp; Data Breaches</td>
<td></td>
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<td>Week 6 – 2:</td>
<td>Special Legal Issues: “Privilege” and protected communication in the Internet age</td>
<td></td>
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<tr>
<td>Week 7 – 1:</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>Week 7 – 2</td>
<td>Mid-term Exam – 20% of course grade for 476, 10% for 702.</td>
<td></td>
</tr>
<tr>
<td>Week 8 – 1</td>
<td>Review mid-term exam</td>
<td></td>
</tr>
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<td>Week 8 – 2</td>
<td>Overview of International Law Related to Law Fundamentals and Basics (notably, jurisdiction, but also differences in law structure and appellate review)</td>
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<td>Week 9 – 1</td>
<td>Basic Differences of prevailing major International Law related to cybersecurity and hacking (China, Russia, EU) with the US</td>
<td></td>
</tr>
<tr>
<td>Week 9 -2</td>
<td>Privacy – US litigation system vs EU statutory system</td>
<td>Research the issue of privacy related to cybersecurity such as mobile privacy and write a one to two page paper discussing the issue. Due class session 10-2. 5% of course grade.</td>
</tr>
<tr>
<td>Week 10 – 2</td>
<td>GDPR; comparisons with how GDPR is enacted and presented to public vs US Privacy Act; GDPR</td>
<td>Research GDPR and write a 1 – 2 page paper on some aspect that causes controversy or conflict with US law. Due</td>
</tr>
<tr>
<td>Week 11 – 1</td>
<td>Analyzing attacks; Who is the hacker? How can a cyber worker respond?</td>
<td>class session 11-2. 5% of course grade.</td>
</tr>
<tr>
<td>Week 11 – 2</td>
<td>Case Studies of Attacks and Responses</td>
<td></td>
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<tr>
<td>Week 12 – 1</td>
<td>Legal Issues related to the Cloud &amp; Other Legal Topics that May have Come Up During Semester</td>
<td></td>
</tr>
<tr>
<td>Week 12 – 2</td>
<td>FEDRAMP</td>
<td></td>
</tr>
<tr>
<td>Week 13 – 1</td>
<td>Semester in-class Case Study</td>
<td>702 case study due- 20% of course grade</td>
</tr>
<tr>
<td>Week 13 – 2</td>
<td>Semester in-class Case Study</td>
<td></td>
</tr>
<tr>
<td>Week 14 – 1</td>
<td>Review of Course</td>
<td></td>
</tr>
<tr>
<td>Week 14 – 2</td>
<td>Course Evaluations; Wrap-Up</td>
<td>Semester papers due! – 20% of course grade for 476, 30% for 702.</td>
</tr>
</tbody>
</table>

Final Exam during week 15.- 20% of course grade for 476, 10% for 702.

**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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Academic Integrity**

For additional information please visit: [www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Course title and number: CSCE 702: Law and Policy in Cybersecurity
Term: Fall 2018
Meeting times and location: WEB

Course Description and Prerequisites

Law and Policy in Cybersecurity. Credits 3. (3-0).
This course examines law and policy issues related to cybersecurity for the spectrum of cybersecurity jobs including procurement, operations/maintenance, governance and oversight, protection/defense, analysis, intelligence collection/operation; and investigation cybersecurity jobs. Tomorrow’s cyber workers are exposed to more data and privacy issues that requires them to analyze law, policies, and regulations both within the United States and internationally. Law is traceable and based on precedent while technology is disruptive. Because of the dynamics of the threat and response landscape, law necessarily lags technology resulting in an uncertain legal and ethical framework, which requires cyberworkers to be able to analyze and distinguish appropriate courses of action as part of their daily tasks.

The course will first examine the fundamentals and basics of law – jurisdiction, due diligence, case/controversy, standing, statute of limitations, remedies/damages, and evidence standards – to establish a foundation to apply and analyze legal issues that are especially problematic regarding cybersecurity. The course then explores the national and international legal frameworks that govern cybersecurity and their implications for attacks, motives, responses, and counter-attacks through the lens of what is permissible against attacking individuals or entities versus attacking nation-states including legal issues such as “hacking back” and problems such as accurate attack attribution. The course will then examine the legal issues raised by the cloud related to privacy and third parties including emerging standards. The overarching goal of this course is to provide a future cyberworker with the knowledge and skills to better interpret threats and responses in a national and international law framework while understanding (and being sympathetic to) the limits of the current law and how law/policy can evolve for cybersecurity.

This course will rely on extensive analysis of laws and policies whereby students will demonstrate their knowledge and skills by preparing short written assignments throughout the semester.

Learning Outcomes or Course Objectives

At the end of this course, the student should be able to:

- Acquire the common body of knowledge for law and policy in cybersecurity to include terminology, concepts, and specific legal terminology.
- Acquire the common body of knowledge related to both national and international laws related to cybersecurity and their differences.
- Apply legal concepts in issues related to cybersecurity including cases/controversies unique to cybersecurity.
- Demonstrate the ability to use legal and policy knowledge by analyzing cybersecurity issues from a cyber worker perspective such as whether a security incident violates a
privacy principle or legal standard requiring specific legal action.

- Demonstrate the ability to work through a case study identifying legal issues, analyzing the cybersecurity action required, and formulating a plan that complies with applicable laws.
- Synthesize an action plan through analyzing cybersecurity legal and policy knowledge issues

Instructor Information

Name: Paula S. deWitte  
Telephone number: 979.845.7398  
Email address: Paula.dewitte@tamu.edu  
Office hours: TBD  
Office location: TBD

Textbook and/or Resource Material

Required Textbook  
TBD

Grading Policies

Please review Texas A&M student rule 7: http://student-rules.tamu.edu/rule07  
It is your responsibility to keep up with the class, even when unexpected events interfere.

Grading Scale

<table>
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<td>Introduction to Course &amp; Expectations; Discussion of Semester Paper; Fundamentals and Basics of Law: Differences</td>
<td></td>
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</table>
between engineering/legal mindset: “It depends;” Due diligence, Jurisdiction, Standing; Venue; Case/Controversy

<p>| Week 1 - 2 | Fundamentals and Basics of Law: Statute of Limitations; Evidence Standards (Civil vs Criminal); Remedies/Damages; “Reasonableness standards,” Civil contract vs Civil tort; Conflict of laws; | Write a one-to-two page paper on a fundamental legal issue as being confusing/critical to cybersecurity; Due class session 2-2. 5% of course grade. |
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| Week 2- 2 | Applying NIST Standards in a Legal Sense: Documentation and how applying good practices may cause legal risk! | Write a one-to-two page paper on a specific NIST family of controls (pick out one or two controls) and think through any legal issues that should be considered. Due class session 3-2. 5% of course grade. |
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| Week 3 – 2 | Presidential Directives related to Securing Critical Infrastructure and Patriot Act | Research a legal issue related to protecting critical infrastructure from one of the SSAs and write a one-to-two page paper on summarizing that legal issue (after class discussion). Due in class session 4-2. 5% of course grade. |
| Week 4 – 1 | Regulatory Agencies (FTC, FCC, SEC, CFPB, DHS, Dept of Education and their authorities; other financial/banking regulations | 689 current events case study topics approved. |
| Week 4 - 2 | Scope and effect of Federal regulations and how enforced; the Yates Memo | Select a federal agency and spend time researching that agency’s current cybersecurity regulations (eliminating those discussed in class). Are there regulations that could be interpreted to include cybersecurity? Write a one to page paper summarizing your findings. Due class session 5-2. 5% of course grade. Semester Papers assigned. |
| Week 5 – 1 | Other Federal Laws: Privacy Act (1974); CFAA (1986) and proposed revisions; effect on “hacking back;” (CISA (2015), Cybersecurity Enhancement Act (2014) |  |
| Week 6 – 1 | State Laws &amp; Data Breaches |  |
| Week 6 – 2 | Special Legal Issues: “Privilege” and protected communication in the Internet age |  |
| Week 7 – 1 | Review |  |
| Week 7 – 2 | Mid-term Exam – 10% for 689. |  |
| Week 8 – 1 | Review mid-term exam; Tallin Manual 2.0 on the |  |</p>
<table>
<thead>
<tr>
<th>Week 8 – 2</th>
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Final Exam during week 15.- 10%

**Americans with Disabilities Act (ADA)**

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**Academic Integrity**

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Course Change Request

Viewing: **CSCE 703 : Cybersecurity Risk**

Also listed as: **CYBR 603**

Last approved: 03/14/18 3:24 am

Last edit: 04/12/18 3:08 pm

Changes proposed by: smilingSheila

Catalog Pages referencing this course

- **CSCE 703:**
  - CSCE - Computer Sci. & Engr.
  - Department of Computer Science and Engineering
- **CYBR 603:**
  - CSCE - Computer Sci. & Engr.
  - Department of Computer Science and Engineering

Faculty Senate Number: **FS.35.153**

Contact(s)

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<td>Daniel Ragsdale</td>
<td><a href="mailto:rags@tamu.edu">rags@tamu.edu</a></td>
<td>9798457398</td>
</tr>
</tbody>
</table>

Rationale for Course

**The proposed changes are to meet the demand/interest of students.**

Course prefix     | CSCE  
Department        | Computer Science & Engineering 
College/School     | College of Engineering 
Academic Level     | Graduate 
Academic Level (alternate) | Undergraduate 
Effective term     | 2018-2019 
Complete Course Title | Cybersecurity Risk 
Abbreviated Course Title | CYBERSECURITY RISK 

Catalog course description

Risks in cybersecurity; avoidance, acceptance, mitigation or transference strategies; developing reliable cybersecurity risk assessments to include analysis, categorization and evaluation; cybersecurity risk audit frameworks.

Prerequisites and Restrictions

Concurrent Enrollment | No 
Should catalog prerequisites | No
### Concurrent Enrollment

**Crosslistings**
- CYBR 603

**Stacked**
- No

### Semester
- 3

### Credit Hour(s)
- 3

### Contact Hour(s)
- Lecture: 3
- Lab: 0
- Other: 0
- Total: 3

### Repeatable for credit?
- No

### Three-peat?
- No

### CIP/Fund Code
- 111030006

### Default Grade Mode
- Letter Grade (G)

### Alternate Grade Modes
- Satisfactory/Unsatisfactory

### Method of instruction
- Lecture

### Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)
- Yes

### Learning Outcomes
- *Meets traditional face-to-face learning outcomes.*

Describe how learning outcomes are met or provide justification why they are not met.

- *Meets traditional face-to-face learning outcomes.*

### Hours
- *Meets traditional face-to-face hours.*

Describe how hours are met or provide justification why they are not met.

- *Meets traditional face-to-face hours.*

### Will this course be taught as a distance education course?
- Yes

### I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.
- Yes

### Is 100% of this course going to be taught in Texas?
- Yes

### Will classroom space be needed for this course?
- Yes

This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Required (select program)</th>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MEN-ENGR) Master of Engineering in Engineering</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective (select program)</th>
<th>Program(s)</th>
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</thead>
<tbody>
<tr>
<td>(MS-CPSC) Master of Science in Computer Science</td>
<td></td>
</tr>
<tr>
<td>(CERT-CYBE) Certificate in Cybersecurity Engineering</td>
<td></td>
</tr>
<tr>
<td>(CERT-CYBP) Certificate in Cybersecurity Policy</td>
<td></td>
</tr>
</tbody>
</table>
### Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload syllabus</td>
<td>cisce703-raes.doc</td>
</tr>
<tr>
<td>Letters of support or other documentation</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| Upload files           | [012218PresidentApprovalMemo.pdf](#)  
                        | [Risk CSCE Fall Web.pdf](#)                          |
| Additional information | Offering distance Fall 2018                          |
| Reviewer Comments      | Scott Schaefer (schaefer) (04/09/18 3:35 pm): Rollback: requested rollback |
| Reported to state?     | Add                                                  |
|                        | No                                                   |

Key: 18392
Course title and number: CSCE 703/CYBR 603: Cybersecurity Risk
Term: Spring 2018
Meeting times and location: TBD

Course Description and Prerequisites
Cybersecurity Risk. Credit 3. (3-0). Risks in cybersecurity; avoidance, acceptance, mitigation, or transference strategies; developing reliable cybersecurity risk assessments to include analysis, categorization, and evaluation; cybersecurity risk audit frameworks. Prerequisites: CSCE 601. Cross-listed with CYBR 603/CSCE 703

Learning Outcomes or Course Objectives
At the end of this course, the student should be able to:
- Demonstrate the common body of knowledge for risk assessment in cybersecurity of information systems.
- Develop an understanding of the basic tools and techniques used in risk assessment in cybersecurity of information systems.
- Synthesize content into completing a complete risk assessment on a sample case study.

Instructor Information
Name: Paula S. deWitte
Telephone number: 979.845.7398
Email address: Paula.dewitte@tamu.edu
Office hours: TBD
Office location: TBD

Textbook and/or Resource Material
Required Textbook: TBD

Grading Policies
The student’s semester grade will be based on lab assignments, exams, and class attendance. Class attendance is essential for student success; therefore, students are required to promptly and regularly attend all their classes. A record of attendance will be maintained from the first day of classes and/or the first day the student’s name appears on
the roster through final examinations and will constitute the participation grade for the course. Absences may only be excused as defined by the Texas A&M University Student Rules available at [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).

### Grading Scale – CSCE 477

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points:</th>
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</thead>
<tbody>
<tr>
<td>Assignments (short weekly or bi-weekly papers)</td>
<td>300</td>
</tr>
<tr>
<td>Papers (semester on approved topics)</td>
<td>200</td>
</tr>
<tr>
<td>Midterm</td>
<td>200</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
<tr>
<td>Class Participation</td>
<td>100</td>
</tr>
</tbody>
</table>

### Grading Scale – CSCE 703

<table>
<thead>
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<th>Requirement</th>
<th>Points:</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Papers (semester on approved topics)</td>
<td>300</td>
</tr>
<tr>
<td>Midterm</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>Case Study Development</td>
<td>100</td>
</tr>
<tr>
<td>Class Participation</td>
<td>100</td>
</tr>
</tbody>
</table>

**Points Grading Scale:**
Out of 1000 assignable points
- A = 900-1000 points
- B = 800-899 points
- C = 700-799 points
- D = 600-699 points
- F = <600 points

**Course Topics, Calendar of Activities, Major Assignment Dates**

*subject to change as necessary*

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics</th>
<th>Assignment Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction to Course &amp; Expectations; Introduction to Semester In-Class Case Study for Discussion; What is risk &amp; Introduction to Risk Management</td>
<td></td>
</tr>
<tr>
<td>Week 1-2</td>
<td>Continue Introduction to Risk Management; An Overview of Major Cyber Incidents that did</td>
<td>Research a risk in a domain or industry other than</td>
</tr>
<tr>
<td>Week 2 – 1</td>
<td>Risk Assessment; Risk Assessment Science; Mathematical Approaches to Risk Management (e.g., Gordon &amp; Loeb Model) &amp; Their Shortcomings when tied to Business Case Analysis</td>
<td>Write a one-to-two page paper on that risk. Due week 2-2-5% of course grade</td>
</tr>
<tr>
<td>Week 2- 2</td>
<td>Information System Life-Cycle and Risk Management; Walk-thru NIST SP 800-53, R5; NIST SP 800-30, 37, and 39 (all available online)</td>
<td>Write a one-to-two page paper on a specific NIST family of controls (pick out one or two controls) and think through any risk issues that should be considered. Due in week 3-2- 5% of course grade</td>
</tr>
<tr>
<td>Week 3 – 1</td>
<td>US Cybersecurity Laws Related to Risk</td>
<td>Prepare for class discussion a set of interview questions for conducting a risk assessment</td>
</tr>
<tr>
<td>Week 3 – 2</td>
<td>Critical Infrastructure Risk: Presidential Directives, Executive Orders, Regulations – and how they add to the Risk Profile</td>
<td>Research an issue related to protecting critical infrastructure from one of the SSAs and write a one-to-two page paper on summarizing that issue (after class discussion). Due week 4-2- 5% of course grade</td>
</tr>
<tr>
<td>Week 4 – 1</td>
<td>The NSA IAM Approach to Risk Assessment Pt. 1</td>
<td></td>
</tr>
<tr>
<td>Week 4 - 2</td>
<td>The NSA IAM Approach to Risk Assessment Pt. 2</td>
<td>Select a federal agency and spend time researching that agency’s current cybersecurity regulations (eliminating those agencies discussed in class). Are there regulations that could be interpreted to include cybersecurity? Write a one to page paper summarizing your findings due week 5-2-5% of course grade.</td>
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<td>Week 5 – 1</td>
<td>The NSA IEM Approach to Risk Assessment Pt. 1</td>
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<td>The NSA IEM Approach to Risk Assessment Pt. 2</td>
<td></td>
</tr>
<tr>
<td>Week 6 – 1</td>
<td>Certification &amp; Accreditation to manage risk</td>
<td></td>
</tr>
<tr>
<td>Week 6 – 2:</td>
<td>FISMA – NIST 800 Series</td>
<td></td>
</tr>
<tr>
<td>Week 7 – 1:</td>
<td>Review for Mid-term</td>
<td></td>
</tr>
<tr>
<td>Week 7 – 2</td>
<td>Mid-term</td>
<td>20% of course grade 477, 10% 703</td>
</tr>
<tr>
<td>Week 8 – 1</td>
<td>Continuous Monitoring</td>
<td>Assigned Semester in-class Case Study discussed at end of Semester, 703- develop case study activity assignment, due week 13-2 - 10% of course grade</td>
</tr>
<tr>
<td>Week 8 – 2</td>
<td>SANS Top 20 Controls</td>
<td></td>
</tr>
<tr>
<td>Week 9 – 1</td>
<td>Other Risk Frameworks/Requirements: CoBit, ITIL, ISO 27000, SOX, GLB, PCI DSS, HIPAA...</td>
<td>Frameworks comparison/contrast paper Due week 10-2 - 5% of course grade</td>
</tr>
<tr>
<td>Week 9 -2</td>
<td>Cyber Laws—Int’l</td>
<td></td>
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<tr>
<td>Week 10 – 1</td>
<td>Cyber Laws— focused on EU, China, Russia</td>
<td></td>
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<tr>
<td>Week 10 – 2</td>
<td>Cyber Insurance related to Risk</td>
<td></td>
</tr>
<tr>
<td>Week 11 – 1</td>
<td>Cyber Ethics &amp; Privacy related to Risk Pt 1</td>
<td>Cyber Ethics Paper, Due week 12-1- 5% of course grade</td>
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<tr>
<td>Week 11 – 2</td>
<td>Cyber Ethics &amp; Privacy related to Risk Pt 2</td>
<td></td>
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<tr>
<td>Week 12 – 1</td>
<td>Semester in-class Case Study Discussion &amp; Presentations (Different than Case Study used in Class Discussions)</td>
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<td></td>
</tr>
<tr>
<td>Week 13 – 1</td>
<td>Putting risk in perspective as outlined in first class meeting</td>
<td></td>
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<tr>
<td>Week 13 – 2</td>
<td>Emerging risk topics</td>
<td></td>
</tr>
<tr>
<td>Week 14 – 1</td>
<td>Review of Course</td>
<td></td>
</tr>
<tr>
<td>Week 14 – 2</td>
<td>Course Evaluations; Wrap-Up</td>
<td>Semester papers due- 20% of course grade 477, 30% of course grade 703</td>
</tr>
</tbody>
</table>

Final Exam during week 15- 20% of course grade 477, 10% of course grade 703

**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, currently located in
the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

**Academic Integrity**

*For additional information please visit: [www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)*

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Course title and number  CSCE 703: Cybersecurity Risk
Term  Fall 2018
Meeting times and location  WEB

Course Description and Prerequisites

Cybersecurity Risk. Credit 3. (3-0). Cybersecurity is risk based. This course will examine risk assessment and management in cybersecurity focusing on developing risk assessments according to prevailing government and industry standards. Risk can be avoided, accepted, mitigated, or transferred. Risk assessments analyze risks to provide a basis for making risk management decisions by better understanding risk over the totality of cybersecurity controls. Students developing reliable cybersecurity risk assessments to include analysis, categorization, and evaluation; cybersecurity risk audit frameworks. This course will rely on extensive analysis or risk whereby students will demonstrate their knowledge and skills by preparing short written assignments throughout the semester.

Learning Outcomes or Course Objectives

At the end of this course, the student should be able to:

- Demonstrate the common body of knowledge for risk assessment in cybersecurity of information systems.
- Develop an understanding of the basic tools and techniques used in risk assessment in cybersecurity of information systems.
- Analyze cyber risk across the spectrum of the NIST Risk Management Framework (RMF) control families.
- Compare and contrast various approaches to cybersecurity risk.
- Analyze new and emerging risk requirements (such as the General Data Protection Regulation that will go into effect in May 2018) and how risk assessments must adapt to be current with emerging requirements.
- Synthesize content into completing a complete risk assessment project on a classroom case study.

Instructor Information

Name  Paula deWitte  
Telephone number  979.845.7398  
Email address  Paula.dewitte@tamu.edu  
Office hours  TBD  
Office location  TBD
Required Textbook
TBD

Grading Policies

Please review Texas A&M student rule 7: [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)
It is your responsibility to keep up with the class, even when unexpected events interfere.

Grading Scale

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<tr>
<td>Week 1 - 2</td>
<td>Continue Introduction to Risk Management; An Overview of Major Cyber Incidents that did not properly consider risk</td>
<td>Research a risk in a domain or industry other than cybersecurity and summarize in a one-to-two page paper on that risk. Due week 2-2-5% of course grade</td>
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</tr>
<tr>
<td>Week 7 – 2</td>
<td>Mid-term</td>
<td>10% 689</td>
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<tr>
<td>Week 8 – 1</td>
<td>Continuous Monitoring</td>
<td>Assigned Semester in-class Case Study discussed at end of Semester, 689- develop case study activity assignment, due week 13-2 - 10% of course grade</td>
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<td>SANS Top 20 Controls</td>
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<td></td>
<td>Semester papers due-, 30% of course grade 689</td>
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Final Exam during week 15- 10% of course grade 689

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**Academic Integrity**

*For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Course Change Request

Date Submitted: 11/30/17 9:40 am

Viewing: ECMT 670: Econometric Analysis of Financial Data

Last edit: 04/19/18 10:40 am

Changes proposed by: marge

Catalog Pages referencing this course:
- Department of Economics
  - ECMT - Econometrics

Programs referencing this course:
- BS/MS-ECON/ECON-LEC: Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Lomas Carpenter</td>
<td><a href="mailto:marge@tamu.edu">marge@tamu.edu</a></td>
<td>979-845-7376</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix: ECMT  
Course number: 670

Department: Economics
College/School: Liberal Arts
Academic Level: Graduate
Effective term: 2019-2020

Catalog course description:
Predictability of asset returns, test of random walk hypothesis, the microstructure of securities markets, event analysis, the CAPM and arbitrage pricing theory, the term structure of interest rates, dynamic models of economic equilibrium and nonlinear financial models; provides an accessible combination of theory and practice.

Prerequisites and Restrictions:
Graduate classification: must be enrolled in the 5-Year BS/MS in Economics department of economics master's program; or approval of instructor, director of master's program.

Concurrent Enrollment: No
Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings: No  Crosslisted With

In Workflow
1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
6. LA College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path
1. 04/18/18 4:45 pm Silvana Krasteva (ssk8): Approved for ECON Reviewer GR
2. 04/19/18 7:45 am Timothy Gronberg (tgronberg): Approved for ECON Department Head
3. 04/19/18 10:33 am Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/18/18 1:28 pm Tiffany Green (tgreen): Approved for LA Committee Preparer GR
5. 05/14/18 2:09 pm Leroy Dorsey (l-dorsey): Approved for LA Committee Chair GR
6. 05/14/18 2:12 pm Leroy Dorsey (l-dorsey): Approved for LA College Dean GR
7. 06/13/18 12:15 pm Meagan Kelly (meagankelly): Approved for GC Preparer
8. 07/20/18 4:26 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair

https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate
Course Syllabus

Syllabus: Upload syllabus

Upload syllabus

Letters of support or other documentation: No

Additional information

Reviewer Comments: Sandra Williams (sandra-williams) (04/19/18 10:33 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state? No
Course Change Request

Date Submitted: 11/30/17 9:42 am

Viewing: ECMT 680 : Financial Econometrics

Last edit: 04/19/18 10:40 am
Changes proposed by: marge

Catalog Pages referencing this course
- Department of Economics
  - ECMT - Econometrics

Programs referencing this course
- BS/MS-ECON/ECON-LEC: Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

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<td>979-845-7376</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix        ECMT
Department         Economics
College/School     Liberal Arts
Academic Level     Graduate
Academic Level (alternate)     Undergraduate
Effective term     2019-2020

Complete Course Title
Financial Econometrics

Abbreviated Course Title
FINANCIAL ECONOMETRICS

Catalog course description
Basic concepts of financial engineering and elementary theory of stochastic processes and continuous time models; selected topics related to current financial econometrics research.

Prerequisites and Restrictions
Graduate classification; enrolled in the 5-Year BS/MS in Economics program; or approval of instructor.

Concurrent Enrollment
No

Should catalog prerequisites / concurrent enrollment be enforced?
No

Crosslistings
No

Stacked
No

In Workflow
1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
6. LA College Dean GR
7. GC Preparer
8. GC Chair
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12. President
13. Curricular Services
14. Banner

Approval Path
1. 04/18/18 4:54 pm
   Silvana Krasteva (ssk8): Approved for ECON Reviewer GR
2. 04/19/18 7:45 am
   Timothy Gronberg (tgronberg): Approved for ECON Department Head
3. 04/19/18 10:36 am
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/19/18 1:29 pm
   Tiffany Green (tgreen): Approved for LA Committee Preparer GR
5. 05/14/18 2:09 pm
   Leroy Dorsey (l-dorsey): Approved for LA Committee Chair GR
6. 05/14/18 2:12 pm
   Leroy Dorsey (l-dorsey): Approved for LA College Dean GR
7. 06/13/18 12:16 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer
8. 07/20/18 4:26 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
Semester: 3  
Contact Hour(s) (per week): 3  
Lecture: 3  
Lab: 0  
Other: 0  
Total: 3

Repeatable for credit? No  
Three-peat? No  
CIP/Fund Code: 4506030001  
Default Grade Mode: Letter Grade (G)  
Alternate Grade Modes: Satisfactory/Unsatisfactory  
Method of instruction: Lecture  
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) No

Will this course be taught as a distance education course? No  
Is 100% of this course going to be taught in Texas? Yes  
Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

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<tbody>
<tr>
<td>(BS/MS-ECON/ECON-LEC) Economics - 5-Year Bachelor of Science/Master of Science in Economics</td>
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</table>

**Course Syllabus**

Syllabus: Upload syllabus  
Upload syllabus

Letters of support or other documentation: No

Additional information

Reviewer Comments: Sandra Williams (sandra-williams) [04/19/18 10:36 am]: Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state? No
Course Change Request

Date Submitted: 11/30/17 9:44 am

Viewing: ECON 612: Money, Banking and Financial Markets

Last edit: 04/19/18 10:39 am

Changes proposed by: marge

Catalog Pages referencing this course

- Department of Economics
  - ECON - Economics

Programs referencing this course

- BS/MS-ECON/ECON-LEC, Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

Contact(s)

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Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix: ECON  
Course number: 612

Department: Economics

College/School: Liberal Arts

Academic Level: Graduate

Academic Level (alternate): Undergraduate

Effective term: 2019-2020

Complete Course Title: Money, Banking and Financial Markets

Abbreviated Course Title: MONEY BANKING FIN MKTS

Catalog course description:

Role of financial markets and institutions in the allocation of resources in the real economy; the financial regulatory and policy infrastructure underlying financial activity to promote efficiency in asset valuation, risk management and economic growth.

Prerequisites and Restrictions

Graduate classification; enrolled in the 5-Year BS/MS in Economics program; department of economics master's program or approval of instructor, director of master's program.

Concurrent Enrollment: No

Should catalog prerequisites / concurrent enrollment be enforced?: No

Crosslistings: No

Crosslisted With

Approval Path

1. 04/18/18 4:54 pm  
   Silvana Krasteva (ssk8): Approved for ECON Reviewer GR

2. 04/19/18 7:45 am  
   Timothy Gronberg (tgronberg): Approved for ECON Department Head

3. 04/19/18 10:39 am  
   Sandra Williams (sandra-williams): Approved for Curricular Services Review

4. 04/19/18 1:30 pm  
   Tiffany Green (tgreen): Approved for LA Committee Preparer GR

5. 05/14/18 2:09 pm  
   Leroy Dorsey (l-dorsey): Approved for LA Committee Chair GR

6. 05/14/18 2:12 pm  
   Leroy Dorsey (l-dorsey): Approved for LA College Dean GR

7. 06/13/18 12:16 pm  
   Meagan Kelly (meagankelly): Approved for GC Preparer

8. 07/20/18 4:26 pm  
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
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Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

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**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus

Letters of support or other documentation: No

Additional information

Reviewer Comments

Sandra Williams (sandra-williams) (04/19/18 10:37 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Sandra Williams (sandra-williams) (04/19/18 10:39 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state? No
Course Change Request

Date Submitted: 11/30/17 9:44 am

Viewing: ECON 614: Economics of Microfinance

Last edit: 04/19/18 10:41 am
Changes proposed by: marge

Catalog Pages referencing this course:
- Department of Economics
  - ECON - Economics

Programs referencing this course:
- BS/MS-ECON/ECON-LEC; Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

Contact(s)

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</tbody>
</table>

Rationale for Course

Edit

The proposed changes are part of a routine curriculum review.

Course prefix: ECON
Course number: 614
Department: Economics
College/School: Liberal Arts
Academic Level: Graduate
Effective term: 2019-2020

Catalog course description:
Analysis of recent research in financial markets in developing countries with a primary emphasis on microfinance; micro-asymmetries involved in lending; financial impact studies; the macro-economic literature on financial development and growth.

Prerequisites and Restrictions:
- ECON 607 or equivalent; graduate classification; enrolled major in the 5-Year BS/MS in Economics program; Department of Economics' master's program or approval of instructor. director of master's program.

Concurrent Enrollment: No
Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings: No
Crosslisted With

In Workflow
1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
6. LA College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path
1. 04/18/18 4:54 pm Silvana Krasteva (ssk8): Approved for ECON Reviewer GR
2. 04/19/18 7:45 am Timothy Gronberg (tgronberg): Approved for ECON Department Head
3. 04/19/18 10:41 am Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/19/18 1:30 pm Tiffany Green (tgreen): Approved for LA Committee Preparer GR
5. 05/14/18 2:09 pm Leroy Dorsey (l-dorsey): Approved for LA Committee Chair GR
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https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate
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This will be a required course or an elective course for the following programs:

- Required (select program)
- Elective (select program)

**Program(s)**

(BS/MS-ECON/ECON-LEC) Economics - 5-Year Bachelor of Science/Master of Science in Economics

---

**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus

Letters of support or other documentation | No |

Additional information

Reviewer Comments: Sandra Williams (sandra-williams) (04/19/18 10:41 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state? | No |

---

Key: 4550
Course Change Request

Date Submitted: 11/30/17 9:44 am

Viewing: **ECON 617 : Economics of the Multinational Firm**

Last edit: 04/19/18 10:42 am

Changes proposed by: marge

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Faculty Senate Number

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</table>

Rationale for Course Edit

*The proposed changes are part of a routine curriculum review.*

Course prefix ECON Course number 617

Department Economics

College/School Liberal Arts

Academic Level Graduate

Academic Level (alternate) Undergraduate

Effective term 2019-2020

Complete Course Title Economics of the Multinational Firm

Abbreviated Course Title ECON OF MULTINATL FIRM

Catalog course description

Economics of the multinational firm, taking a firm-level approach to the study of international investment; structured around recent papers from the frontier of international trade research; examination of trends in multinational activity and exploration of the reasons behind decisions to invest abroad including understanding different types of foreign direct investment; the impact of multinational firms and how government policies impact foreign direct investment (FDI), including an overview of transfer pricing and the arm's length principle.

Prerequisites and Restrictions

Graduate classification; enrolled in the 5-Year BS/MS in Economics program; or approval of instructor, economics master's program.

Concurrent Enrollment No

Should catalog prerequisites / concurrent enrollment be enforced? Yes

In Workflow

1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
6. LA College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path

1. 04/18/18 4:54 pm Silvana Krasteva (ssk8): Approved for ECON Reviewer GR
2. 04/19/18 7:46 am Timothy Gronberg (tgronberg): Approved for ECON Department Head
3. 04/19/18 10:42 am Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/19/18 1:31 pm Tiffany Green (tgreen): Approved for LA Committee Preparer GR
5. 05/14/18 2:09 pm Leroy Dorsey (ldorsey): Approved for LA Committee Chair GR
6. 05/14/18 2:12 pm Leroy Dorsey (ldorsey): Approved for LA College Dean GR
7. 06/13/18 12:16 pm Meagan Kelly (meagankelly): Approved for GC Preparer
8. 07/20/18 4:26 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
Semester: 3
Credit Hour(s): 3
Repeatable for credit?: No
Three-peat?: No
CIP/Fund Code: 4506010001
Default Grade Mode: Letter Grade (G)
Alternate Grade Modes: Satisfactory/Unsatisfactory
Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education): No
Will this course be taught as a distance education course?: No
Is 100% of this course going to be taught in Texas?: Yes
Will classroom space be needed for this course?: Yes
This will be a required course or an elective course for the following programs:

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**Course Syllabus**

Syllabus: Upload syllabus
Upload syllabus

Letters of support or other documentation: No

Additional information
Reviewer Comments: Sandra Williams (sandra-williams) (04/19/18 10:42 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state?: No
Course Change Request

Date Submitted: 11/30/17 9:45 am

Viewing: ECON 618 : Behavioral Financial Economics

Last edit: 04/19/18 10:43 am
Changes proposed by: marge

Catalog Pages referencing this course
- Department of Economics
  - ECON - Economics

Programs referencing this course
- BS/MS-ECON/ECON-LEC; Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

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Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix: ECON
Course number: 618
Department: Economics
College/School: Liberal Arts
Academic Level: Graduate
Academic Level (alternate): Undergraduate
Effective term: 2019-2020

Complete Course Title
Behavioral Financial Economics

Abbreviated Course Title
BEHAVIOR FINANCIAL ECON

Catalog course description
Describes how individuals and firms make financial decisions that deviate from those predicted by traditional financial or economic theory; examines how the insights of behavioral finance complement the traditional finance paradigm.

Prerequisites and Restrictions
Graduate classification; must be enrolled in the 5-Year BS/MS master's program in Economics program; or approval by the department of instructor, Economics.

Concurrent Enrollment
No

Should catalog prerequisites / concurrent enrollment be enforced?
No

Crosslistings
No

Crosslisted With

In Workflow
1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
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Approval Path
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Repeatable for credit? No

Three-peat? No

CIP/Fund Code 4506010001

Default Grade Mode Letter Grade (G)

Alternate Grade Modes Satisfactory/Unsatisfactory

Method of instruction Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) No

Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

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**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus

Letters of support or other documentation No

Additional information

Reviewer Comments Sandra Williams (sandra-williams) (04/19/18 10:43 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state? No

Key: 4554
Course Change Request

Date Submitted: 11/30/17 9:48 am

Viewing: ECON 633 : Energy Markets and Policy

Last edit: 04/19/18 10:44 am

Changes proposed by: marge

Catalog Pages referring this course
- Department of Economics
  - ECON - Economics

Programs referencing this course
- CERT-CU16: Energy Accounting - Certificate
- BS/MS-ECON/ECON-LEC: Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

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Rationale for Course

The proposed changes are part of a routine curriculum review.

Edit

Course prefix    ECON
Department        Economics
College/School   Liberal Arts
Academic Level   Graduate
Academic Level (alternate) Undergraduate
Effective term   2019-2020

Complete Course Title
Energy Markets and Policy

Abbreviated Course Title
ENERGY MARKETS

Catalog course description
Economics of energy markets and energy regulation with emphasis on implications for optimal energy policy; sectors include gasoline, oil, electricity, natural gas, renewables, nuclear; economic theory integrated with empirical applications from American and international experience; new energy markets, energy trading, and interaction with environmental policy.

Prerequisites and Restrictions
Graduate classification; enrolled in the 5-Year BS/MS in Economics program; or approval of instructor.

Concurrent Enrollment No
Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings No

Crosslisted With

In Workflow
1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
6. LA College Dean GR
7. GC Preparer
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9. Faculty Senate Preparer
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
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8. 07/20/18 4:26 pm LaRhesa Johnson (ljohnson): Approved for GC Chair
### ECON 633: Energy Markets and Policy

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#### Semester Credit Hour(s)

- Repeatable for credit: No
- Three-peat: No
- CIP/Fund Code: 4506010001
- Default Grade Mode: Letter Grade (G)
- Alternate Grade Modes: Satisfactory/Unsatisfactory
- Method of instruction: Lecture
- Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education): No

- Will this course be taught as a distance education course?: No
- Is 100% of this course going to be taught in Texas?: Yes
- Will classroom space be needed for this course?: Yes

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### Course Syllabus

- Syllabus: [Upload syllabus](#)
- Upload syllabus
- Letters of support or other documentation: No
- Additional information
- Reviewer Comments: Sandra Williams (sandra-williams) (04/19/18 10:44 am): Edits made to catalog prerequisites to comply with our catalog style guide.
- Reported to state: No

---

Key: 4565
Course Change Request

Date Submitted: 11/30/17 9:50 am

Viewing: **ECON 663 : International Transfer Pricing**

Also listed as: **INTA 663 / MGMT 663**

Last edit: 04/19/18 1:36 pm

Changes proposed by: marge

Catalog Pages referencing this course

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<td>Department of Management</td>
</tr>
<tr>
<td></td>
<td>ECON, Economics</td>
</tr>
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Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Lomas Carpenter</td>
<td><a href="mailto:marge@tamu.edu">marge@tamu.edu</a></td>
<td>979-845-7376</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

<table>
<thead>
<tr>
<th>Course prefix</th>
<th>Department</th>
<th>Course number</th>
<th>Academic Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON</td>
<td>Economics</td>
<td>663</td>
<td>Graduate</td>
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<tr>
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<td></td>
<td></td>
<td>(alternate)</td>
</tr>
<tr>
<td></td>
<td></td>
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</table>

Effective term: **2019-2020**

Complete Course Title

International Transfer Pricing

Abbreviated Course Title

INTL TRANSFER PRICING

Catalog course description

Valuation of cross-border transactions between units of a multinational enterprise; includes internal and external motivations for transfer pricing, managerial and economic approaches; estimates of transfer manipulation, arm's length standard, U.S. and OECD rules and procedures, tax court cases and ethical dilemmas.

Prerequisites and Restrictions

Graduate classification; enrolled in the 5-Year BS/MS in Economics program; or approval of instructor. Graduate classification.

Concurrent Enrollment

No

Should catalog prerequisites / concurrent enrollment be enforced?

No

In Workflow

1. ECON Reviewer GR
2. ECON Department Head
3. INTA Department Head
4. MGMT Department Head
5. Curricular Services Review
6. LA Committee Preparer GR
7. LA Committee Chair GR
8. LA College Dean GR
9. GC Preparer
10. GC Chair
11. Faculty Senate Preparer
12. Faculty Senate
13. Provost II
14. President
15. Curricular Services
16. Banner

Approval Path

1. 04/18/18 4:54 pm Silvana Krasteva (ssk8): Approved for ECON Reviewer GR
2. 04/19/18 7:46 am Timothy Gronberg (tgronberg): Approved for ECON Department Head
3. 04/19/18 7:51 am Gregory Gause (gregory.gause): Approved for INTA Department Head
4. 04/19/18 9:24 am Wendy Boswell (wboswell): Approved for MGMT Department Head
5. 04/19/18 10:48 am Sandra Williams (sandra-williams): Rollback to INTA Department Head for Curricular Services Review
6. 04/19/18 11:47 am Gregory Gause (gregory.gause): Approved for INTA Department Head
7. 04/19/18 12:32 pm Wendy Boswell
Course Syllabus

Syllabus: Upload syllabus
Upload syllabus

Letters of support or other documentation: No

Additional information

Reviewer Comments
Sandra Williams (sandra-williams) (04/19/18 10:47 am): Edits made to catalog prerequisites to comply with our catalog style guide.
Sandra Williams (sandra-williams) (04/19/18 10:48 am): Rollback: The updated catalog prerequisites that includes BS/MS-ECON program will be listed for all cross-listed courses including INTA and MGMT. Just want to
confirm this is okay with you as the INTA and MGMT courses will also have this updated catalog prerequisite listed in the course descriptions.

Sandra Williams (sandra-williams) (04/19/18 1:36 pm): No response/comments from INTA/MGMT...assume change is okay for all three courses.

Reported to state?

No
**Course Change Request**

**Date Submitted:** 11/30/17 9:51 am

**Viewing:** ECON 668: Decisions Under Risk and Uncertainty

**Last edit:** 04/19/18 10:49 am

**Changes proposed by:** marge

---

**Catalog Pages referencing this course**

- Department of Economics
  - ECON - Economics

**Programs referencing this course**

- BS/MS-ECON/ECON-LEC; Economics - 5-Year Bachelor of Science/Master of Science in Economics

---

**Faculty Senate Number**

---

**Contact(s)**

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<td>979-845-7376</td>
</tr>
</tbody>
</table>

---

**Rationale for Course Edit**

The proposed changes are part of a routine curriculum review.

---

**Course prefix**

- ECON

**Course number**

- 668

**Department**

- Economics

**College/School**

- Liberal Arts

**Academic Level**

- Graduate

**Academic Level (alternate)**

- Undergraduate

---

**Effective term**

- 2019-2020

**Complete Course Title**

- Decisions Under Risk and Uncertainty

**Abbreviated Course Title**

- DECSN UNDER RISK & UNCERT

---

**Catalog course description**

The mean-variance and expected utility decision models; the use of risk models in asset valuation, financial decision-making and economic analysis; portfolio choice, insurance demand, saving, investment and consumption decisions.

---

**Prerequisites and Restrictions**

- ECON 607 or equivalent; *graduate classification*; enrolled in the 5-Year BS/MS in Economics program; Department of Economics' master's program or approval of instructor, director of the master's program.

---

**Concurrent Enrollment**

- No

**Should catalog prerequisites / concurrent enrollment be enforced?**

- No

**Crosslistings**

- No

**Crosslisted With**

---

---

**Approval Path**

1. 04/18/18 4:54 pm
   - Silvana Krasteva (ssk8): Approved for ECON Reviewer GR

2. 04/19/18 7:46 am
   - Timothy Gronberg (tgronberg): Approved for ECON Department Head

3. 04/19/18 10:49 am
   - Sandra Williams (sandra-williams): Approved for Curricular Services Review

4. 04/19/18 1:33 pm
   - Tiffany Green (tgreen): Approved for LA Committee Preparer GR

5. 05/14/18 2:10 pm
   - Leroy Dorsey (l-dorsey): Approved for LA Committee Chair GR

6. 05/14/18 2:12 pm
   - Leroy Dorsey (l-dorsey): Approved for LA College Dean GR

7. 06/13/18 12:16 pm
   - Meagan Kelly (meagankelly): Approved for GC Preparer

8. 07/20/18 4:26 pm
   - LaRhesa Johnson (lrjohnson): Approved for GC Chair
### ECON 668: Decisions Under Risk and Uncertainty

<table>
<thead>
<tr>
<th>Stacked</th>
<th>No</th>
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<th>Semester</th>
<th>3</th>
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<tr>
<td>Credit Hour(s)</td>
<td>3 Contact Hour(s) (per week):</td>
<td>Lecture: 3</td>
<td>Lab: 0</td>
<td>Other: 0</td>
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<td>Repeatable for credit?</td>
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<td>Three-peat?</td>
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<td>Default Grade Mode</td>
<td>Letter Grade (G)</td>
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<td>Alternate Grade Modes</td>
<td>Satisfactory/Unsatisfactory</td>
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<tr>
<td>Method of instruction</td>
<td>Lecture</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)</td>
<td>No</td>
<td></td>
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<td>Will this course be taught as a distance education course?</td>
<td>No</td>
<td></td>
<td></td>
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<td>Is 100% of this course going to be taught in Texas?</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will classroom space be needed for this course?</td>
<td>Yes</td>
<td></td>
<td></td>
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<td>This will be a required course or an elective course for the following programs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required (select program)</td>
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<tr>
<td>Elective (select program)</td>
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</table>

**Program(s)**

- (BS/MS-ECON/ECON-LEC) Economics - 5-Year Bachelor of Science/Master of Science in Economics

---

### Course Syllabus

**Syllabus:**

Upload syllabus

**Letters of support or other documentation:**

No

**Additional information:**

**Reviewer Comments:**

Sandra Williams (sandra-williams) [04/19/18 10:49 am]: Edits made to catalog prerequisites to comply with our catalog style guide.

**Reported to state?**

No

---

[Key: 4581]
Course Change Request

Date Submitted: 11/30/17 9:51 am

Viewing: ECON 680: Financial Economics

Last edit: 04/19/18 10:51 am
Changes proposed by: marge

Catalog Pages referencing this course
- Department of Economics
- ECON - Economics

Programs referencing this course
- BS/MS-ECON/ECON-LEC: Economics - 5-Year Bachelor of Science/Master of Science in Economics

Faculty Senate Number

Contact(s)

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<td>979-845-7376</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix: ECON
Course number: 680
Department: Economics
College/School: Liberal Arts
Academic Level: Graduate
Effective term: 2019-2020

Complete Course Title: Financial Economics
Abbreviated Course Title: FINANCIAL ECONOMICS

Catalog course description:
Advanced theory of dynamic asset pricing utilizing the Economics of risk and uncertainty within a general equilibrium framework; stochastic calculus applications to the analysis of asset markets; theoretical foundations and empirical testing.

Prerequisites and Restrictions:
- Graduate classification; enrolled in the 5-Year BS/MS in Economics program; or approval of instructor. ECON 630 and ECON 646.

Concurrent Enrollment: No
Should catalog prerequisites / concurrent enrollment be enforced? No
Crosslistings: No
Crosslisted With: No

In Workflow
1. ECON Reviewer GR
2. ECON Department Head
3. Curricular Services Review
4. LA Committee Preparer GR
5. LA Committee Chair GR
6. LA College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path
1. 04/18/18 4:54 pm
   Silvana Krasteva (ssk8): Approved for ECON Reviewer GR
2. 04/19/18 7:46 am
   Timothy Gronberg (tgronberg): Approved for ECON Department Head
3. 04/19/18 10:52 am
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/19/18 1:35 pm
   Tiffany Green (tgreen): Approved for LA Committee Preparer GR
5. 05/14/18 2:10 pm
   Leroy Dorsey (l-dorsey): Approved for LA Committee Chair GR
6. 05/14/18 2:12 pm
   Leroy Dorsey (l-dorsey): Approved for LA College Dean GR
7. 06/13/18 12:16 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer
8. 07/20/18 4:26 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
Course Syllabus

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Program(s)

(BS/MS-ECON/ECON-LEC) Economics - 5-Year Bachelor of Science/Master of Science in Economics

Reviewer Comments

Sandra Williams (sandra-williams) (04/19/18 10:51 am): Edits made to catalog prerequisites to comply with our catalog style guide.

Reported to state?

No
Course Change Request

Date Submitted: 05/07/18 12:41 pm


Last edit: 05/07/18 12:41 pm
Changes proposed by: gbyrns

Catalog Pages referencing this course
- CPSY - Counseling Psychology
- Department of Educational Psychology
- EPSY - Educational Psychology

Contact(s)

<table>
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<tr>
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<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glenda Byrns</td>
<td><a href="mailto:gbyrns@tamu.edu">gbyrns@tamu.edu</a></td>
<td>9798622289</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix: EPSY
Course number: 640
Department: Educational Psychology
College/School: Education & Human Development
Academic Level: Graduate
Effective term: 2019-2020

Complete Course Title

Statistical Analysis Experimental Design in Educational Research I

Abbreviated Course Title

STAT ANALYSIS EXPER DESIGN IN ED RESEARCH I

Catalog course description
Preparation in data analysis techniques for experimental and non-experimental research design in educational studies; application of statistical methods in these designs.

Prerequisites and Restrictions
EPSY 636 or equivalent; approval of department head.

Should catalog prerequisites / concurrent enrollment be enforced? Yes No

Enforced Prerequisites / Concurrent Enrollment

<table>
<thead>
<tr>
<th>And/Or</th>
<th>Course Prefix/Number</th>
<th>Min Grade/Score</th>
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<th>Concurrency</th>
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<td>EPSY 636</td>
<td>C</td>
<td>GR</td>
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</tr>
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</table>

In Workflow

1. EPSY Department Head
2. Curricular Services Review
3. ED Committee Preparer GR
4. ED Committee Chair GR
5. ED College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 05/09/18 5:34 pm
   Shanna Hagan-Burke (shaganburke): Approved for EPSY Department Head

2. 05/14/18 3:46 pm
   Terra Bisse (t.bisse): Approved for Curricular Services Review

3. 05/14/18 4:05 pm
   Melanie Robideau (mrobideau): Approved for ED Committee Preparer GR

4. 06/18/18 3:15 pm
   Beverly Irby (irbyb): Approved for ED Committee Chair GR

5. 06/18/18 3:17 pm
   Beverly Irby (irbyb): Approved for ED College Dean GR

6. 07/03/18 8:41 am
   LaRhesa Johnson (lrjohnson): Approved for GC Preparer

7. 07/20/18 4:26 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
Crosslistings: No
Crosslisted With: No
Stacked: No
Stacked with: No

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<th>Semester</th>
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<td>Contact Hour(s)</td>
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<td>Lecture:</td>
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<td>Lab:</td>
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<td>Other:</td>
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<tr>
<td>Total</td>
<td>3</td>
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Repeatable for credit: No

CIP/Fund Code: 2703010001
Default Grade Mode: Letter Grade (G)
Method of instruction: Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)

Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas?

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)
Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Letters of support or other documentation: No

Additional information

Reviewer Comments:
Sandra Williams (sandra-williams) (05/04/18 11:30 am): Rollback: These type of changes do not require a syllabus but since it is included, the syllabus is missing attendance/late-work policy and link to student rule 7. I assume this is still the same course and only being modified to update content/name, and not a brand new course.

Shanna Hagan-Burke (shaganburke) (05/07/18 10:49 am): Rollback: Per your request

Terra Bissett (t.bissett) (05/14/18 3:45 pm): Updates received.

Key: 6024
Course Description & Objectives
This is an intermediate-level statistics course for graduate students in social and behavioral sciences. It is designed to provide students with data analysis techniques for experimental and non-experimental designs. After completing this course, students should be able to: (1) generate meaningful research questions and statistical hypotheses, (2) use statistical software such as STATA to analyze data and answer research questions, and (3) interpret statistical information.

Prerequisites
Students are expected to have taken: EPSY636 or any equivalent courses. Students who have not taken the required courses have to meet with the instructor before they register for this course.

Textbooks

Other Materials
Lecture handouts, supplementary articles, and data sets can be downloaded from the eCampus course site (https://eCampus.tamu.edu)

Software
- A calculator (that can perform all basic mathematical operations) will be necessary for homework and exam problems.
- Students will be required to use STATA 15. STATA 15 is free to download for TAMU students. More detailed information about STATA 15 installation is posted in the eCampus.
- STATA 15 is also available in all open access labs, including the EREL lab in Harrington 718.

Grading
Grades will be based on the following:
a) Assignments/Homework (40%)
   - The homework assignments are designed to help you learn the lecture and reading material. All answers should be typed. Information that is difficult or impossible
for you to type (like formulas) can be added by writing it in, but please type everything else! Please read the homework guidelines for more details.

- Assignments should be submitted via eCampus.
- Homework will be graded based on effort, completeness, and accuracy. Each problem will be graded on a five-point scale to indicate the level of accuracy and understanding reflected in the answer:

<table>
<thead>
<tr>
<th>Points</th>
<th>Evaluation of answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Complete, correct and clear.</td>
</tr>
<tr>
<td>3</td>
<td>Minor mistakes (computational and/or conceptual), slightly unclear.</td>
</tr>
<tr>
<td>2</td>
<td>Some mistakes and/or misconceptions, somewhat unclear or incomplete.</td>
</tr>
<tr>
<td>1</td>
<td>Serious mistakes and/or misconceptions, very unclear or incomplete.</td>
</tr>
<tr>
<td>0</td>
<td>Not done or barely attempted.</td>
</tr>
</tbody>
</table>

- You can discuss assignments with other students; however, you should do the analysis and write up the answers on your own. Copying others’ work (including syntax, output, and report) is considered as academic misconduct and will have severe consequences.

b) Midterm Exam (30%
  - Open-book in-class exam
  - Consists of multiple choice and short answer questions

c) Final Exam (30%
  - Open-book in-class exam
  - Cumulative
  - Consists of multiple choice and short answer questions

Letter Grade Conversion Chart

<table>
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<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
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Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1</td>
<td>8/29 Introduction</td>
<td>Howell 1</td>
</tr>
<tr>
<td>2</td>
<td>9/05 Describing and exploring data I</td>
<td>Howell 2</td>
</tr>
<tr>
<td>3</td>
<td>9/12 Describing and exploring data II</td>
<td>Howell 2</td>
</tr>
<tr>
<td>4</td>
<td>9/19 Standardized values and the normal distribution</td>
<td>Howell 3</td>
</tr>
<tr>
<td>5</td>
<td>9/26 Sampling distribution</td>
<td>Howell 4.1-4.3</td>
</tr>
<tr>
<td>6</td>
<td>10/03 Hypothesis testing</td>
<td>Howell 4.4-4.9</td>
</tr>
<tr>
<td>7</td>
<td>10/10 One-sample t-test and paired sample t-test</td>
<td>Howell 7.1-7.4</td>
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<tr>
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<td>Date</td>
<td>Topic</td>
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<tr>
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<td>8</td>
<td>10/17</td>
<td>Midterm</td>
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<td>10/24</td>
<td>Independent-sample t-test</td>
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<td>10</td>
<td>10/31</td>
<td>Effect size and Power</td>
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<td>11</td>
<td>11/07</td>
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<td>12</td>
<td>11/14</td>
<td>One-way ANOVA (I)</td>
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<td>One-way ANOVA (II)</td>
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<tr>
<td>14</td>
<td>12/05</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>

**Handouts**

The handouts used in this course are copyrighted. By "handouts" I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission.

**Attendance Policy**

“The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).”

**Late Assignments Policy**

Late assignments are not accepted except under special conditions approved by university. Please refer to Rule 7 at [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07). The Course Instructor must be notified of the need for an extension on the deadline of the assignments.

**Americans with Disabilities Act (ADA) Policy Statement**

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity Statement and Policy**

“An Aggie does not lie, cheat, or steal or tolerate those who do.”
As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc. which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues, without which research cannot be safely communicated. For additional information please visit: http://aggiehonor.tamu.edu
Course Change Request

Date Submitted: 05/07/18 12:41 pm

Viewing: **EPSY 641: Statistical Analysis Experimental Design in Educational Research Education II**

Last edit: 05/14/18 3:46 pm

Changes proposed by: gbyrns

### Catalog Pages
- CPSY - Counseling Psychology
- Department of Educational Psychology
- EPSY - Educational Psychology

### Faculty Senate Number

Contact(s)

<table>
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<th>Phone</th>
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<td><a href="mailto:gbyrns@tamu.edu">gbyrns@tamu.edu</a></td>
<td>9798622289</td>
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### Rationale for Course

**Edit**

The proposed changes are part of a routine curriculum review.

### Course Information

**Course prefix**
EPSY

**Course number**
641

**Department**
Educational Psychology

**College/School**
Education & Human Development

**Academic Level**
Graduate

**Effective term**
2019-2020

**Complete Course Title**
*Statistical Analysis Experimental Design in Educational Research Education II*

**Abbreviated Course Title**
EXPER DESIGN IN ED II

**Catalog course description**
Preparation in more advanced data analysis techniques for experimental and non-experimental research design in educational studies; application of statistical methods in these designs.

**Prerequisites and Restrictions**
EPSY 640; approval of instructor and department head.

**Concurrent Enrollment**
No

**Should catalog prerequisites / concurrent enrollment be enforced?**
Yes

In Workflow

1. EPSY Department Head
2. Curricular Services Review
3. ED Committee Preparer GR
4. ED Committee Chair GR
5. ED College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 05/09/18 5:34 pm Shanna Hagan-Burke (shaganburke): Approved for EPSY Department Head
2. 05/14/18 3:47 pm Terra Bissett (t.bisset): Approved for Curricular Services Review
3. 05/14/18 4:05 pm Melanie Robideau (mrobideau): Approved for ED Committee Preparer GR
4. 06/18/18 3:15 pm Beverly Irby (irbyb): Approved for ED Committee Chair GR
5. 06/18/18 3:17 pm Beverly Irby (irbyb): Approved for ED College Dean GR
6. 07/03/18 8:41 am LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 07/20/18 4:26 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
### Course Syllabus

**Syllabus:** Upload syllabus

**Upload syllabus**  
EPSY 641 Statistical Analysis in Educational Research II.pdf

**Letters of support or other documentation**  
No

**Additional information**

**Reviewer Comments**  
Shanna Hagan-Burke (shaganburke) (05/07/18 10:49 am): Rollback: Per your request

Terra Bissett (t.bissett) (05/14/18 3:47 pm): Minor edits made to form.

**Reported to state?**
EPSY 641 Statistical Analysis in Educational Research II

Time: Monday 4:40-7:15pm  
Classroom: EDCT725  

Instructor: Dr. Eunkyeng Baek  
Office: 718E Harrington Tower  
Phone: 979-845-1335  
Email: baek@tamu.edu  
Office hours: By appointment

Course Description & Objectives
This is an intermediate-level statistics course for graduate students in social and behavioral sciences. It is designed to provide students with data analysis techniques for experimental and non-experimental designs. As a second course in the series, EPSY641 covers more advanced statistical techniques and provides students with more hands-on experience in application. After completing this course, students should be able to: (1) generate meaningful research questions and statistical hypotheses, (2) use statistical software such as STATA to analyze data and answer research questions, (3) interpret and report statistical information in academic writing.

Prerequisites
Students are expected to have taken: EPSY640 or any equivalent courses. Students who have not taken the required courses have to meet with the instructor before they register for this course.

Textbooks

Other Materials
Lecture handouts, supplementary articles, and data sets can be downloaded from the eCampus course site.

Software
- A calculator (that can perform all basic mathematical operations) will be necessary for homework and exam problems.
- Students will be required to use STATA 14. STATA 14 is free to download and install on personal computers for students enrolled in this class. More detailed information about STATA 14 installation is posted in the eCampus.
- STATA 14 is also available in all open access labs, including the EREL lab in Harrington 718.

Grading
Grades will be based on the following three components.  
a) Assignments (45%)
  - Project-based assignments (30%)
    - One-way ANOVA
Regression

- Textbook problems (15%)
  - Chi-square test
  - Two-way ANOVA
  - Repeated measure ANOVA

Homework will be graded based on effort, completeness, and accuracy. Each problem will be graded on a three-point scale to indicate the level of accuracy and understanding reflected in the answer:

<table>
<thead>
<tr>
<th>Points</th>
<th>Evaluation of answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Complete, correct and clear.</td>
</tr>
<tr>
<td>3</td>
<td>Minor mistakes (computational and/or conceptual), slightly unclear.</td>
</tr>
<tr>
<td>2</td>
<td>Some mistakes and/or misconceptions, somewhat unclear or incomplete.</td>
</tr>
<tr>
<td>1</td>
<td>Serious mistakes and/or misconceptions, very unclear or incomplete.</td>
</tr>
<tr>
<td>0</td>
<td>Not done or barely attempted.</td>
</tr>
</tbody>
</table>

The homework assignments are designed to help you learn the lecture and reading material. All answers should be **typed**. Information that is difficult or impossible for you to type (like formulas) can be added by writing it in, but please type everything else. Please read the homework guidelines for more details.

Assignments should be submitted via eCampus.

You can discuss assignments with other students; however, you should do the analysis and write up the answers on your own. Copying others’ work (including syntax, output, and report) is considered as academic misconduct and will have severe consequences.

b) Exam (20%)

- Open-book in-class exam
- Consists of multiple choice and short answer questions

c) Group Project (35%)

- Use your own data or data collected by others, think of a meaningful research question, use appropriate statistical methods to analyze the data, interpret the statistical results, and answer the research question.
- You can work with other students or on your own. No more than 4 people in a group.
- **Proposal (5%)**
  - Students should submit a one-page proposal describing tentative research questions or hypotheses, data (participants and variables), and analytical plans.
o Students should find a journal article as an example for their final project. The analysis used in the journal article should match the proposed analysis in the final project. Students should provide a one-paragraph summary of the journal article.

o **Due before class on 4/9.**

- **Presentation (10%).**
- **Paper (20%).** Due on 5/7.

### Letter Grade Conversion Chart

<table>
<thead>
<tr>
<th>90-100</th>
<th>70-89</th>
<th>60-69</th>
<th>50-59</th>
<th>Below 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

### Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/22 Overview and Power</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/29 Chi-square test</td>
<td>Ch 6</td>
</tr>
<tr>
<td>3</td>
<td>2/5 One-way ANOVA &amp; assumption checking</td>
<td>Ch11.10-11.13</td>
</tr>
<tr>
<td>4</td>
<td>2/12 Multiple Comparisons</td>
<td>Ch 12</td>
</tr>
<tr>
<td>5</td>
<td>2/19 Factorial Analysis of Variance (I)</td>
<td>Ch13.1-13.6</td>
</tr>
<tr>
<td>6</td>
<td>2/26 Factorial Analysis of Variance (II)</td>
<td>Ch13.7-13.13</td>
</tr>
<tr>
<td>8</td>
<td>3/12 Spring Break No Class</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3/26 Exam</td>
<td>Ch14.8-14.12</td>
</tr>
<tr>
<td>10</td>
<td>4/2 Simple regression</td>
<td>Ch9.6-9.16</td>
</tr>
<tr>
<td>11</td>
<td>4/9 Multiple regression (I)</td>
<td>Ch15.1-15.8</td>
</tr>
<tr>
<td>12</td>
<td>4/16 Multiple regression (II)</td>
<td>Ch15.9-15.13</td>
</tr>
</tbody>
</table>
| 13   | 4/23 Analysis of Covariance Mediating and Moderating      | Ch16.5-16.11
|      | Relationships                                              | Ch15.14  |
| 14   | 4/30 Final presentation                                   |         |

### Handouts
The handouts used in this course are copyrighted. By "handouts" I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission.

### Attendance Policy

“The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)."
Late Assignments Policy
Late assignments are not accepted except under special conditions approved by university. Please refer to Rule 7 at http://student-rules.tamu.edu/rule07. The Course Instructor must be notified of the need for an extension on the deadline of the assignments.

Americans with Disabilities Act (ADA) Policy Statement
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu

Academic Integrity Statement and Policy

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

As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc. which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues, without which research cannot be safely communicated. For additional information please visit: http://aggiehonor.tamu.edu
Course Change Request

Date Submitted: 04/17/18 8:31 am

Rationale for Course

Edit

The proposed changes are part of a routine curriculum review.

Course prefix FINC Course number 649
Department Finance
College/School Mays Business School
Academic Level Graduate
Effective term 2019-2020
Complete Course Title Financial Modeling
Abbreviated Course Title FINANCIAL MODELING

Catalog course description

Computer-based modeling of contemporary problems in investments and corporate finance including asset pricing, portfolio optimization, valuation, capital budgeting, cost of capital, risk assessment, and option pricing; using models to evaluate financial decision variables and alternative investment strategies.

Prerequisites and Restrictions

Graduate classification; classification 6 students may not enroll in this course. FINC 351, 422 or FINC 603, or 632; FINC 361, FINC 602, 434 or FINC 629; ACCT 327 or equivalent. FINC 629.

Concurrent Enrollment

No

Should catalog prerequisites / concurrent enrollment be enforced?

Yes

Enforced Prerequisites / Concurrent Enrollment

In Workflow

1. FINC Department Head
2. Curricular Services Review
3. BA Committee Preparer GR
4. BA Committee Chair GR
5. BA College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 04/19/18 10:45 am
   Richard Dye (tdye): Approved for FINC Department Head
2. 04/19/18 10:56 am
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 04/19/18 12:58 pm
   Angela Catlin (acatlin): Approved for BA Committee Preparer GR
4. 05/08/18 1:15 pm
   Michael Shaub (mshaub): Approved for BA Committee Chair GR
5. 05/08/18 1:17 pm
   Michael Kinney (kinneym): Approved for BA College Dean GR
6. 06/13/18 12:16 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer
7. 07/20/18 4:26 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
And/Or | ( | Course Prefix/Number | Min Grade/Score | Academic Level | ) | Concurrency?
---|---|---|---|---|---|---
| ( | FINC 351 423 | D | UG | ) | 
| Or | FINC 603 362 | D | GR UG | ) | 
| Or | FINC 632 | D | GR UG | ) | 
| And | ( | FINC 361 434 | D | UG | ) | 
| Or | FINC 602 362 | D | GR UG | ) | 
| Or | FINC 629 | D | GR UG | ) | 

Crosslistings: No
Crosslisted With: 

Stacked: No
Stacked with: 

Semester: 3
Credit Hour(s): 3
Contact Hour(s) (per week): Lecture: 3 Lab: 0 Other: 0 Total: 3

Repeatable for credit: No
Three-peat: No

CIP/Fund Code: 5208040016
Default Grade Mode: Letter Grade (G)
Alternate Grade Modes: Satisfactory/Unsatisfactory
Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education): Yes

Learning Outcomes
Meets traditional face-to-face learning outcomes.
Describe how learning outcomes are met or provide justification why they are not met.
Previously approved via memo (Spring 2018).

Hours
Meets traditional face-to-face hours.
Describe how hours are met or provide justification why they are not met.
Previously approved via memo (Spring 2018).

Will this course be taught as a distance education course?: No
Is 100% of this course going to be taught in Texas?: Yes
Will classroom space be needed for this course?: Yes

This will be a required course or an elective course for the following programs:
Required (select program)
## Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letters of support or other documentation</td>
<td>No</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td></td>
</tr>
<tr>
<td>Sandra Williams (sandra-williams) (02/01/18 5:13 pm): Rollback: Changes being made - not an Administrative Save.</td>
<td></td>
</tr>
<tr>
<td>Sandra Williams (sandra-williams) (04/19/18 10:56 am): Minor edits made to form.</td>
<td></td>
</tr>
<tr>
<td>Reported to state?</td>
<td>No</td>
</tr>
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</table>
Course Change Request

Date Submitted: 06/22/18 11:45 am

Viewing: HLTH 611: Organization and Administration of Health

Last edit: 06/22/18 1:19 pm
Changes proposed by: koroche

Catalog Pages referencing this course

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kathleen Roche</td>
<td><a href="mailto:koroche@tamu.edu">koroche@tamu.edu</a></td>
<td>979-845-7230</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are part of a routine curriculum review.

Course prefix    HLTH
Course number    611
Department       Health & Kinesiology
College/School   Education & Human Development
Academic Level   Graduate
Academic Level   Undergraduate
Effective term   2018-2019

Complete Course Title
Organizations and Administration of Health

Abbreviated Course Title
ORGANIZ AND ADMIN HEALTH

Catalog course description
Organizing and management of public health education and health promotion programs; public health administration issues and management skills emphasized.

Prerequisites and Restrictions
Graduate classification.

Concurrent Enrollment
No

Should catalog prerequisites / concurrent enrollment be enforced?
No

Crosslistings
No
Crosslisted With

Stacked
No
Stacked with

In Workflow
1. HLKN Department Head
2. Curricular Services Review
3. ED Committee Preparer GR
4. ED Committee Chair GR
5. ED College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
1. 06/22/18 11:47 am
   Kathleen Roche (koroche): Approved for HLKN Department Head
2. 06/22/18 4:35 pm
   Terra Bissett (t.bisse): Approved for Curricular Services Review
3. 06/22/18 4:47 pm
   Melanie Robideau (mrobideau): Approved for ED Committee Preparer GR
4. 07/20/18 10:45 am
   Beverly Irby (irbyb): Approved for ED Committee Chair GR
5. 07/20/18 10:46 am
   Beverly Irby (irbyb): Approved for ED College Dean GR
6. 07/31/18 12:51 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer
7. 08/08/18 2:24 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair

https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate 1/3
<table>
<thead>
<tr>
<th>Semester</th>
<th>3</th>
<th>Contact Hour(s) (per week):</th>
<th>Lecture: 3</th>
<th>Lab: 0</th>
<th>Other: 0</th>
<th>Total 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hour(s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatable for credit?</td>
<td>No</td>
<td>Three-peat?</td>
<td>No</td>
<td>CIP/Fund Code</td>
<td>5122070014</td>
<td></td>
</tr>
<tr>
<td>Default Grade Mode</td>
<td>Letter Grade (G)</td>
<td>Alternate Grade Modes</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Method of instruction</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Faculty in the Division of Health Education (HLTH) have examined syllabi from each course, and associated course section, where a live version and online version (i.e., both long and short semesters) are offered. Through dialogue among faculty who have, or currently are, teaching a course section we have reached consensus on the final course learning outcomes for each course. To ensure compliance with University Rule 11.03.99.M1 regarding intended learning outcomes, all course sections will reflect the same learning objectives in their respective syllabi.

### Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

The HLTH committee performed a systematic review of instructional hours by directly comparing each F2F course and section to its WB counterpart for synergy. In addition, if a course was WB and no F2F counterpart was offered, the committee performed the same review. The committee adhered to the commonly accepted formula (i.e., lecture minutes × 2.5) to calculate the lecture time for WB courses (i.e., both long and short semesters) and sections. Additionally, we considered degree level, quiz and exam times, readings (e.g., book chapters and articles), outside assignments, discussion postings, and other forms of alternate instruction to determine whether total contact hours exceeded 135 hours and corresponded to the F2F course and section. From this process, the HLTH committee determined that this course and sections comply with University Rule 11.03.99.M1 in terms of direct and alternative instruction time.

Will this course be taught as a distance education course? Yes No

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)
### Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload syllabus</td>
<td><a href="HLTH%20611%20Syllabus.pdf">HLTH 611 Syllabus.pdf</a></td>
</tr>
</tbody>
</table>

Letters of support or other documentation: **No**

Additional information

Reviewer Comments: **Sandra Williams (sandra-williams) (06/22/18 1:44 pm):** Department wants this effective Fall 2018.

Reported to state? **No**
HLTH 611 Organization and Administration of Health

Instructor Information:
Name: Adam E. Barry, PhD
Telephone number: (979) 862-2964
Email address: aebarry@tamu.edu
*Make sure you include HLTH 611 in the subject to ensure a prompt response.*
Office hours: By Appointment
Office location: Blocker 314C

Catalog Description of Course:
Administration, management, and leadership concepts affecting practicing health educators. Focus on the health education and health promotion workplace.

Course Description and Prerequisites:
Administration & Management of Health Education prepares practicing health educators for positive relationships with middle-managers, administrators, and professional leaders through expanded

1. understanding of the concepts of organization, administration, management, supervision, and leadership when applied to the health education field;
2. appreciation of the relationship of the health education specialists with administrators and managers;
3. familiarity with the fundamentals of human resources management in organizations that employ health educators;
4. the identification of best practices regarding fundraising, fiscal management, and supervision.

Learning Goals or Course Goals:
This course of study provides students an opportunity to practice (skill outcomes):
• obtaining acceptance and support for the health education program;
• demonstrating leadership;
• managing human resources;
• facilitating partnerships in support of health education;
• engaging in health education advocacy; and
• influence policy to promote health.

Course Textbook and/or Resource Materials:
• All video lectures, notes, and additional readings will be available on the course website.
**Course Structure:**
This is an online-delivered asynchronous distance education course. Asynchronous means that you will interact with the course material in your own space and on your own schedule during the time you allocate for this coursework. With this tremendous flexibility comes the demand for tremendous self-discipline and awareness of your work habits. **Within this course, there are no planned on campus meetings, exams, or presentation events.**

The lectures, notes, and materials for this course are provided on the course website: [http://ecampus.tamu.edu](http://ecampus.tamu.edu) (please book mark this site). To access the course content please follow these steps:

1. Go to [http://ecampus.tamu.edu/](http://ecampus.tamu.edu/)
2. Click “Login”
3. When prompted, enter your NetID and password
4. Then click on the link for “HLTH 611 – Organization and Administration of Health”
5. Once logged into the course you will use the links located in the course menu on left side of the homepage to navigate through the course content.

**Required Software:**
- Internet Browser such as Explorer or Firefox
- Flash Plug-in
- Window Media Player
- NEO Email Account (Note: All course emails will be sent to your NEO account)
- Adobe Reader

**A link is provided on the course website in the “Course Menu” under “Required Materials.”**

**Technical Support:**
If you are experiencing any technical problems with the website or the course lectures please contact Bruce Hanik at bhanik@tamu.edu. In your email make sure you include which course you are having problems with and a short description of the problem. Bruce will get with you within 24 hours to assist with the problem. This is the quickest way to receive technical assistance regarding issues with the website or software required for the course.

**Grading Policies:**
The grade you receive at the end of the semester is the grade you earn. Your grade will be determined based upon your performance on the activities and assessments outline below. All assignments are posted on the course website and must be submitted no later than 11:55pm CST on their respective due date - **late assignments will not be accepted.** Assignments must be uploaded to the course website unless otherwise instructed by your professor.

**Note:** All assignments are to be completed individually and all students are expected to uphold the Aggie Code of Honor.
**Quizzes:** The quizzes are designed to help you assess your mastery of module material. Each quiz is worth 15 points. The quizzes have no time limit but you must complete, save, and submit each quiz before their respective deadline. All online quizzes must be individual efforts; you are expected to uphold the Aggie Code of Honor.

The link to each module quiz is at the bottom of each module page. Click on this link to access quiz instructions, and then click the “Attempt quiz now” button when you are ready to begin. To submit your quiz for grading, click the “Next” button (which saves your answers) at the bottom of the page. A summary page now shows you the questions you have answered, flagged, and left blank. When you are ready to submit your work, click on the “Submit all and finish” button. Unless you click “Submit all and finish,” your answers will not be saved or submitted.

When you complete the quiz, you will be able to see your score. You may review the quiz questions, your responses after the quiz due date has passed. To access this review, click on the link to the quiz, then on the “Review” link under the summary of your previous attempts.

You are responsible for completing each quiz no later than 11:55pm on its due date; however, all quizzes can be taken early. Late attempts for quizzes are allowed only at your professor’s discretion. However, the usual reason to allow late quiz attempts is if you have a university-approved excuse for missing the quiz. All quiz due dates are located in the timeline at the bottom of the syllabus and on the calendar on the course website.

The quizzes are:
- Modules 1 to 3 Quiz (5 points)
- Modules 4 to 6 Quiz (5 points)
- Modules 7 to 10 Quiz (5 points)
- Modules 11 to 13 Quiz (5 points)
- Modules 14 & 15 Quiz (5 points)

For the **Final Examination** you will be given 1 attempt with a 60 minute time limit. You will not be able to review your exams; to do so you need to schedule a meeting with your instructor. The exams’ dates are listed in the outline at the bottom of the syllabus. The exam is:
- Final Examination (70 points).

**Forum Posts:** These assignments are designed for students to express their opinions about health education. All forums will require one original response to the questions asked and at least one response to another student’s post. When making your original post: click “add a new discussion topic” then enter your subject and message and click “post to forum”. You will have 30 minutes after your original post to edit your thoughts. To reply to a posting, click on the discussion title then when you get to a posting you
would like to comment on click reply and repeat the steps mentioned above. The forum assignment is:

- Is it Time to Sack Lucy Custer? (10 points)

**Uploads:** These assignments and exercises are designed to assess your knowledge and application skills associated with health education (specific directions for each upload can be found on the course website). To upload an assignment, click on the “Browse...” button then find the document on your computer and click the “Open” button. Lastly, you will need to click on the “Upload this file” button. When a document is successfully uploaded the file name will appear under the “Submission” section of the assignment page.

- The New Unit (25 points)
- Report Requirements (20 points)
- Budget Justification (25 points)
- The Tardy File Clerk (25 points)
- The New Job Description (25 points)
- The Test of Leadership (25 points)
- My Words of Wisdom on Being Administered and Managed Paper (100 points)
- My Words of Wisdom on Being Administered and Managed Video (50 points)

**Points Grading Scale:**

I do not and will not give additional points or provide extra credit to increase your final grade. In other words, an 89.99% is a B.

Grades in HLTH 611 will be determined according to the following course point structure:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>25</td>
</tr>
<tr>
<td>Final Exam</td>
<td>70</td>
</tr>
<tr>
<td>Forum</td>
<td>10</td>
</tr>
<tr>
<td>Uploads/Exercises</td>
<td>295</td>
</tr>
<tr>
<td>Total Points</td>
<td>400</td>
</tr>
</tbody>
</table>

Letter grades will be assigned according to the following course point structure:

- A = 360 - 400 points
- B = 320 - 359 points
- C = 280 - 319 points
- D = 240 - 279 points
- F = <240 points
## Course Outline:

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
<th>Lecture(s)</th>
<th>Required Reading(s)</th>
<th>Assignments DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Administration &amp; Management of Health Education</td>
<td>Introduction to Administration &amp; Management of Health Education</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Health Education Administration</td>
<td>Health Education Administration</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>Reporting</td>
<td>None</td>
<td>● AHEC Montana Annual Report ● University of Connecticut Health Education Office Annual Report ● Alachua County Health Department Annual Report</td>
<td>Upload: ● Report Requirements (Sun. 10/8/16 by 11:55pm CST) Quiz: ● Modules 8.4, 8.5 &amp; 8.6 (Sun 10/8/16 by 11:55pm CST)</td>
</tr>
<tr>
<td></td>
<td>Health Education Management</td>
<td>Health Education Management</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>12</td>
<td>Records and Career Management</td>
<td>None</td>
<td>None</td>
<td>Forum: ● Is it time to Sack Lucy Custer? ○ Part 1 (Sun, 11/19/16 by 11:55pm CST) ○ Part 2 (Tues. 11/21/16 by 11:55pm CST)</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td>• The Test of Leadership (Sun. 12/3/16 by 11:55pm CST)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Modules 8.14 &amp; 8.15 (Sun. 12/3/16 by 11:55pm CST)</td>
<td>Uploads:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• My words of Wisdom on Being Administered and Managed Paper (Wed. 12/6/16 by 11:55pm CST)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• My words of Wisdom on Being Administered and Managed Video (Wed. 12/6/16 by 11:55pm CST)</td>
<td></td>
</tr>
</tbody>
</table>

**Final Examination**

The exam opens Fri., Dec. 8th at 8am CST and closes Mon., Dec. 11th at 11:55pm CST.

**Academic Honesty:**

The Aggie Honor Code states:

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

Upon accepting admission to Texas A&M University, individuals immediately assume a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor system. Please think about what this honor code means, and let it shape and guide your behavior. For additional information please visit: [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)

**Academic Dishonesty Procedures:**

Should you be suspected of academic dishonesty, the course instructor will have the option to send the matter to the Honor Council or can adjudicate the case through the department. You will be notified via e-mail of the intent to submit the case to the Honor Council or of the appropriate steps to take to adjudicate the matter through the department. Texas A&M University is required by law to discuss these matters only with the student. The instructors, staff, and graduate assistants of the Office of Digital Learning Technologies cannot and will not discuss any academic issues with anyone other than the student including parents and/or guardians.

**Student Services for 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 845-1637. For additional information please visit http://disability.tamu.edu.

If you are a student that has registered with Disability Services, please make sure we get the required paperwork so that we make proper accommodations for any course assignments.

**Student Rules:**
Each student has the responsibility to be fully acquainted with and to comply with the *Texas A&M University Student Rules*. More specific rules, information and procedures may be found in various publications pertaining to each particular service or department. For more information about the rules, please visit, http://student-rules.tamu.edu/.

**Copyrighted Materials:**
Most of the handouts and lecture materials used in this course are copyrighted (including but not limited to syllabus, exams, notes and any web-based materials). These are legally protected documents. Do not reproduce these materials for any use other than those related to this course.

**Disclaimer:**
Should you have any problems or comments that you would like to share about the online courses, please contact Bruce Hanik by email at bhanik@tamu.edu or by phone at 979-862-7656.

**Caveat:**
The schedule and procedures in this course are subject to change in the event of extenuating circumstances.
Course Change Request

Date Submitted: 05/23/18 2:09 pm

Viewing: HLTH 645: Health Education Research and Program Evaluation

Last edit: 05/24/18 8:17 am

Changes proposed by: koroche

Catalog Pages referencing this course

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kathleen Roche</td>
<td><a href="mailto:koroche@tamu.edu">koroche@tamu.edu</a></td>
<td>979-845-7230</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix: HLTH  Course number: 645

Department: Health & Kinesiology

College/School: Education & Human Development

Academic Level: Graduate

Effective term: 2018-2019

Complete Course Title: Health Education Research and Program Evaluation

Abbreviated Course Title: HLTH ED RSCH & EVAL

Catalog course description:

Design and conduct health education and health promotion research and evaluation; provide an overview of program evaluation and research theory, methodology, and application.

Prerequisites and Restrictions:

Graduate classification; admission to E-Master’s program in Health Education.

Concurrent Enrollment: No

Should catalog prerequisites / concurrent enrollment be enforced?: No

Crosslistings: No

Crosslisted With:

In Workflow

1. HLKN Department Head
2. Curricular Services Review
3. ED Committee Preparer GR
4. ED Committee Chair GR
5. ED College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 05/23/18 2:15 pm
   Kathleen Roche (koroche): Approved for HLKN Department Head
2. 05/24/18 8:47 am
   Terra Bisset (t.bisset): Approved for Curricular Services Review
3. 05/24/18 11:21 am
   Melanie Robideau (mrobideau): Approved for ED Committee Preparer GR
4. 06/18/18 3:16 pm
   Beverly Irby (irbyb): Approved for ED Committee Chair GR
5. 06/18/18 3:17 pm
   Beverly Irby (irbyb): Approved for ED College Dean GR
6. 07/03/18 8:41 am
   LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 07/20/18 4:26 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
Faculty in the Division of Health Education (HLTH) have examined syllabi from each course, and associated course section, where a live version and online version (i.e., both long and short semesters) are offered. Through dialogue among faculty who have, or currently are, teaching a course section we have reached consensus on the final course learning outcomes for each course. To ensure compliance with University Rule 11.03.99.M1 regarding intended learning outcomes, all course sections will reflect the same learning objectives in their respective syllabi.

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Hours

Meets traditional face-to-face hours.

Will this course be taught as a distance education course?

Yes

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.

Yes

Is 100% of this course going to be taught in Texas?

Yes

Will classroom space be needed for this course?

No

This will be a required course or an elective course for the following programs:
### Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload syllabus</td>
<td><a href="https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate">HLTH 611 Syllabus.pdf</a></td>
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</table>

Letters of support or other documentation: No

Additional information:

Reviewer Comments:

Reported to state?
Course Change Request

Date Submitted: 07/26/18 10:35 am

Viewing: ISTM 615 : Business Database Systems

Formerly known as: ISYS 615
Last approved: 01/12/17 10:18 pm
Last edit: 07/26/18 1:24 pm

Changes proposed by: vslley

Catalog Pages referencing this course

ISTM 615:
Department of Information and Operations Management
Department of Information and Operations Management
ISTM - Mgmt Info Systems
ISTM - Mgmt Info Systems (ISM)

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veronica Slley</td>
<td><a href="mailto:vslley@mays.tamu.edu">vslley@mays.tamu.edu</a></td>
<td>979-862-8055</td>
</tr>
</tbody>
</table>

Rationale for Course

Edit Other

Explain other rationale

request for non-traditional format approval for Fall 2018

Course prefix     ISTM
Course number     615
Department        Information & Operations Mgmt
College/School    Mays Business School
Academic Level    Graduate
Academic Level    Undergraduate
Effective term    2018-2019 2017-2018

Complete Course Title

Business Database Systems

Abbreviated Course Title

BUSINESS DATABASE SYSTEM

Catalog course description

Information processing and management involving applications and user orientation in a business environment using commercially available database management systems.

Prerequisites and Restrictions

Knowledge of one programming language.

Concurrent Enrollment    No
Should catalog prerequisites / No

In Workflow

1. INFO Department Head
2. Curricular Services Review
3. BA Committee Preparer GR
4. BA Committee Chair GR
5. BA College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 07/26/18 10:52 am
   Rich Mettes (rmettes): Approved for INFO Department Head
2. 07/26/18 1:24 pm
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 07/26/18 2:01 pm
   Angela Catlin (jacatlin): Approved for BA Committee Preparer GR
4. 07/26/18 4:40 pm
   Michael Shaub (mshaub): Approved for BA Committee Chair GR
5. 07/26/18 4:40 pm
   Michael Kinney (kinneym): Approved for BA College Dean GR
6. 07/31/18 12:52 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer
7. 08/09/18 9:20 am
   LaRhesa Johnson (lrjohnson): Approved for GC Chair

History

1. Jan 12, 2017 by sarah.gordon
### Concurrent Enrollment

<table>
<thead>
<tr>
<th>Concurrent Enrollment</th>
<th>Be Enforced?</th>
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<tbody>
<tr>
<td>Crosslistings</td>
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<tr>
<td>Stack</td>
<td>No</td>
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</table>

### Semester 3

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Contact Hour(s) (per week):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
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<tr>
<td>Hour(s)</td>
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<tr>
<td>Lecture:</td>
<td>3</td>
</tr>
<tr>
<td>Lab:</td>
<td>0</td>
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<tr>
<td>Other:</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
</tr>
</tbody>
</table>

### Repeatable for Credit?

- No

### Three-peat?

- No

### CIP/Fund Code

- 5212010016

### Default Grade Mode

- Letter Grade (G)

### Alternate Grade Modes

- Satisfactory/Unsatisfactory

### Method of Instruction

- Lecture

### Will Sections of this Course be Taught as Non-Traditional? (i.e., parts of term, distance education)

- Yes

### Learning Outcomes

- Meets traditional face-to-face learning outcomes.

### Describe How Learning Outcomes Are Met or Provide Justification Why They Are Not Met

The INFO graduate curriculum committee reviewed the course syllabus to ensure that learning objectives were appropriate for the course level, course content, course sequence, and credit hours. In the opinion of our faculty experts and the committee, we believe that the learning objectives in the syllabus are appropriate for the content and credit hours listed for this course.

### Hours

- Meets traditional face-to-face hours.

### Describe How Hours Are Met or Provide Justification Why They Are Not Met

We teach ISTM 615 in a nontraditional format through simultaneous online delivery of a traditional course. We offer an online section of the course at the same time as a traditional section. Students in the online section attend the course via live internet streaming simultaneously as the traditional face-to-face students. The total contact time per credit hour (15) matches the contact time per credit hour in a traditional course delivery. On that basis, we believe contact hours of this course are equivalent to a traditional course delivery.

### Will This Course Be Taught as a Distance Education Course?

- Yes

### I Verify That I Have Reviewed the FAQ for Export Control Basics for Distance Education.

- Yes

### Is 100% of this Course Going to Be Taught in Texas?

- Yes

### Will Classroom Space Be Needed for this Course?

- Yes

### This Will Be a Required Course or an Elective Course for the Following Programs:

- Required (select program)
- Elective (select program)
## Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
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<tbody>
<tr>
<td></td>
<td>ISTM615-Syllabus-Traditional.pdf</td>
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<tr>
<td></td>
<td>ISTM615-Syllabus-NonTraditional.pdf</td>
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</table>

<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

| Additional information | Memo requesting change from ISYS to ISTM and presidential approval memo attached |

<table>
<thead>
<tr>
<th>Reviewer Comments</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Reported to state?</th>
<th>No</th>
</tr>
</thead>
</table>

Key: 8735
Course Overview and Objectives

The primary objective of the course is to familiarize students with general data management concepts, database design methods, and database implementation. Students use Microsoft SQL Server to gain experience manipulating data in a relational database management system.

At the completion of the course, successful students should be able to:

- Design databases using entity relationship modeling
- Convert entity relationship diagrams into normalized relational databases
- Describe data management techniques (e.g., data warehousing, data analytics, etc.)
- Apply appropriate data management principles to a data analysis problem
- Formulate queries in SQL to analyze a data set

Catalog Description

Information processing and management involving applications and user orientation in a business environment using commercially available database management systems.

Course Prerequisites

Knowledge of one programming language.

Course Materials

Grading and Course Requirements

The course requirements and evaluation of each student’s work in the course are based upon performance in several areas. Grade contributions and letter grade determination are shown below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>SQL Project</td>
<td>15%</td>
</tr>
<tr>
<td>Data Modeling Project</td>
<td>15%</td>
</tr>
<tr>
<td>Homework and Classwork</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 - 100</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89</td>
<td>B</td>
</tr>
<tr>
<td>70 - 79</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69</td>
<td>D</td>
</tr>
<tr>
<td>0 - 59</td>
<td>F</td>
</tr>
</tbody>
</table>

**Exams.** The midterm exam will consist of questions to assess the extent to which students understand how to use Structured Query Language (SQL) to assess data quality of a data set. The final exam will consist of questions to assess students’ understanding of the conceptual issues related to database management and data modeling.

**SQL Project.** The project will give you hands-on experience using SQL to manipulate data. Detailed requirements for the SQL project will be provided on the course website.

**Data Modeling Project.** The data modeling project will give you hands-on experience designing a computer-based database system. Details on the project will be provided on the course website.

**Homework and Classwork.** We will work a number of data modeling, SQL, and other problems in the classroom. I expect students to participate in and to contribute to all classroom discussions and activities. I will assign some problems as homework problems. At times, I will ask you to complete these homework assignments outside of the classroom.
(we will subsequently discuss these problems in class). In other situations, you will have in class time to complete the assignment.

Make Up Policy

I will schedule make-up exams and assignments as needed for any “university excused absence.” For information about what constitutes a “university excused absence,” see Rule 7 of the Student Rules (http://student-rules.tamu.edu).

Late Work Policy

I will discount any homework deliverable submitted after the assignment delivery deadline has passed by 10%. Homework submitted more than 24 hours after the original deadline will receive a zero for the homework score.

I will discount project deliverables submitted after the deadline has passed by 10% per day for up to 72 hours after the deadline. Project deliverables submitted after 72 hours will not be reviewed and receive a zero grade.

**Exception**: I will give students with excused absences adequate time and opportunities to submit work they missed due to absence. Students must provide documentation and notice to the instructor as specified in TAMU student rules. (Student Rules: Rule 7 -- http://student-rules.tamu.edu).

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Religious Holidays

It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required course work that may fall on religious holidays (Student Rules: Rule 7 and Appendix IV at http://student-rules.tamu.edu). If possible, please speak with the
instructor in advance of any such observances to make appropriate arrangements for missed work.

Aggie Honor Code

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

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. You can learn more about the Honor Council Rules and Procedures as well as your rights and responsibilities at the following URL: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

For each assignment or project that is submitted for grading in this course, students must affirm their commitment to the Aggie Honor Code with the following statement.

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Even if you do not explicitly state the above, by submitting any course deliverable, you affirm your adherence to the Aggie Honor Statement for that deliverable.

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, is sufficient grounds to initiate an academic dishonesty case.” ([http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx](http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx))

I will follow the steps and processes outlined in the Honor Council Rules and Procedures in all cases of academic misconduct in this class ([http://aggiehonor.tamu.edu/RulesAndProcedures](http://aggiehonor.tamu.edu/RulesAndProcedures)).

Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Class Discussion</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Database environment and development process</td>
<td>HRT 1</td>
</tr>
<tr>
<td>Week 2</td>
<td>Modeling data in the organization</td>
<td>HRT 2</td>
</tr>
<tr>
<td></td>
<td>The enhanced E-R model</td>
<td>HRT 3</td>
</tr>
<tr>
<td>Week 3</td>
<td>Logical database design and the relational model</td>
<td>HRT 4</td>
</tr>
<tr>
<td>Date</td>
<td>Class Discussion</td>
<td>Reading</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Week 4</td>
<td>Data warehousing</td>
<td>HRT 9</td>
</tr>
<tr>
<td></td>
<td>Data quality and integration</td>
<td>HRT 10</td>
</tr>
<tr>
<td>Week 5</td>
<td>Big data and analytics</td>
<td>HRT 11</td>
</tr>
<tr>
<td>Week 6</td>
<td>Data and database administration</td>
<td>HRT 12</td>
</tr>
<tr>
<td>Week 7</td>
<td><strong>Midterm Exam</strong></td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>Introduction to SQL</td>
<td>Murach 1 (p. 3-35)</td>
</tr>
<tr>
<td></td>
<td>How to use the SQL Server Management Studio</td>
<td>Murach 2</td>
</tr>
<tr>
<td>Week 9</td>
<td>How to retrieve data from a single table</td>
<td>Murach 3</td>
</tr>
<tr>
<td></td>
<td>How to retrieve data from two or more tables</td>
<td>Murach 4</td>
</tr>
<tr>
<td>Week 10</td>
<td>How to code summary queries</td>
<td>Murach 5</td>
</tr>
<tr>
<td></td>
<td>How to code subqueries</td>
<td>Murach 6</td>
</tr>
<tr>
<td>Week 11</td>
<td>How to insert, update, and delete data</td>
<td>Murach 7</td>
</tr>
<tr>
<td></td>
<td>How to work with data types</td>
<td>Murach 8</td>
</tr>
<tr>
<td>Week 12</td>
<td>How to work with functions</td>
<td>Murach 9</td>
</tr>
<tr>
<td></td>
<td>How to create tables</td>
<td>Murach 11</td>
</tr>
<tr>
<td>Week 13</td>
<td>How to work with views</td>
<td>Murach 13</td>
</tr>
<tr>
<td>Week 14</td>
<td>Course wrap up</td>
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</tr>
<tr>
<td></td>
<td>Review for final exam</td>
<td></td>
</tr>
<tr>
<td>Week 15</td>
<td><strong>Final Exam</strong></td>
<td></td>
</tr>
</tbody>
</table>
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- Describe data management techniques (e.g., data warehousing, data analytics, etc.)
- Apply appropriate data management principles to a data analysis problem
- Formulate queries in SQL to analyze a data set

Catalog Description

Information processing and management involving applications and user orientation in a business environment using commercially available database management systems.

Course Prerequisites

Knowledge of one programming language.

Course Materials

Grading and Course Requirements

The course requirements and evaluation of each student’s work in the course are based upon performance in several areas. Grade contributions and letter grade determination are shown below.

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>SQL Project</td>
<td>15%</td>
</tr>
<tr>
<td>Data Modeling Project</td>
<td>15%</td>
</tr>
<tr>
<td>Homework and Classwork</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 - 100</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89</td>
<td>B</td>
</tr>
<tr>
<td>70 - 79</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69</td>
<td>D</td>
</tr>
<tr>
<td>0 - 59</td>
<td>F</td>
</tr>
</tbody>
</table>

**Exams.** The midterm exam will consist of questions to assess the extent to which students understand how to use Structured Query Language (SQL) to assess data quality of a data set. The final exam will consist of questions to assess students’ understanding of the conceptual issues related to database management and data modeling.

**SQL Project.** The project will give you hands-on experience using SQL to manipulate data. Detailed requirements for the SQL project will be provided on the course website.

**Data Modeling Project.** The data modeling project will give you hands-on experience designing a computer-based database system. Details on the project will be provided on the course website.

**Homework and Classwork.** We will work a number of data modeling, SQL, and other problems in the classroom. I expect students to participate in and to contribute to all classroom discussions and activities. I will assign some problems as homework problems. At times, I will ask you to complete these homework assignments outside of the classroom.
(we will subsequently discuss these problems in class). In other situations, you will have in class time to complete the assignment.

Make Up Policy

I will schedule make-up exams and assignments as needed for any “university excused absence.” For information about what constitutes a “university excused absence,” see Rule 7 of the Student Rules (http://student-rules.tamu.edu).

Late Work Policy

I will discount any homework deliverable submitted after the assignment delivery deadline has passed by 10%. Homework submitted more than 24 hours after the original deadline will receive a zero for the homework score.

I will discount project deliverables submitted after the deadline has passed by 10% per day for up to 72 hours after the deadline. Project deliverables submitted after 72 hours will not be reviewed and receive a zero grade.

Exception: I will give students with excused absences adequate time and opportunities to submit work they missed due to absence. Students must provide documentation and notice to the instructor as specified in TAMU student rules. (Student Rules: Rule 7 -- http://student-rules.tamu.edu).

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Religious Holidays

It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required course work that may fall on religious holidays (Student Rules: Rule 7 and Appendix IV at http://student-rules.tamu.edu). If possible, please speak with the
instructor in advance of any such observances to make appropriate arrangements for missed work.

Aggie Honor Code

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

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. You can learn more about the Honor Council Rules and Procedures as well as your rights and responsibilities at the following URL: http://aggiehonor.tamu.edu

For each assignment or project that is submitted for grading in this course, students must affirm their commitment to the Aggie Honor Code with the following statement.

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Even if you do not explicitly state the above, by submitting any course deliverable, you affirm your adherence to the Aggie Honor Statement for that deliverable.

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, is sufficient grounds to initiate an academic dishonesty case.”
(http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx)

I will follow the steps and processes outlined in the Honor Council Rules and Procedures in all cases of academic misconduct in this class (see http://aggiehonor.tamu.edu/RulesAndProcedures).

Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Class Discussion</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Database environment and development process</td>
<td>HRT 1</td>
</tr>
<tr>
<td>Week 2</td>
<td>Modeling data in the organization</td>
<td>HRT 2</td>
</tr>
<tr>
<td></td>
<td>The enhanced E-R model</td>
<td>HRT 3</td>
</tr>
<tr>
<td>Week 3</td>
<td>Logical database design and the relational model</td>
<td>HRT 4</td>
</tr>
<tr>
<td>Date</td>
<td>Class Discussion</td>
<td>Reading</td>
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<td>---------</td>
<td>-------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Week 4</td>
<td>Data warehousing</td>
<td>HRT 9</td>
</tr>
<tr>
<td></td>
<td>Data quality and integration</td>
<td>HRT 10</td>
</tr>
<tr>
<td>Week 5</td>
<td>Big data and analytics</td>
<td>HRT 11</td>
</tr>
<tr>
<td>Week 6</td>
<td>Data and database administration</td>
<td>HRT 12</td>
</tr>
<tr>
<td>Week 7</td>
<td><strong>Midterm Exam</strong></td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>Introduction to SQL</td>
<td>Murach 1</td>
</tr>
<tr>
<td></td>
<td>How to use the SQL Server Management Studio</td>
<td>(p. 3-35)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Murach 2</td>
</tr>
<tr>
<td>Week 9</td>
<td>How to retrieve data from a single table</td>
<td>Murach 3</td>
</tr>
<tr>
<td></td>
<td>How to retrieve data from two or more tables</td>
<td>Murach 4</td>
</tr>
<tr>
<td>Week 10</td>
<td>How to code summary queries</td>
<td>Murach 5</td>
</tr>
<tr>
<td></td>
<td>How to code subqueries</td>
<td>Murach 6</td>
</tr>
<tr>
<td>Week 11</td>
<td>How to insert, update, and delete data</td>
<td>Murach 7</td>
</tr>
<tr>
<td></td>
<td>How to work with data types</td>
<td>Murach 8</td>
</tr>
<tr>
<td>Week 12</td>
<td>How to work with functions</td>
<td>Murach 9</td>
</tr>
<tr>
<td></td>
<td>How to create tables</td>
<td>Murach 11</td>
</tr>
<tr>
<td>Week 13</td>
<td>How to work with views</td>
<td>Murach 13</td>
</tr>
<tr>
<td>Week 14</td>
<td>Course wrap up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Review for final exam</td>
<td></td>
</tr>
<tr>
<td>Week 15</td>
<td><strong>Final Exam</strong></td>
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# Course Change Request

**Viewing: MEEN 601 : Advanced Product Design**

**Last edit: 07/27/18 2:53 pm**

Changes proposed by: schmiae

<table>
<thead>
<tr>
<th>Catalog Pages referencing this course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Materials Science and Engineering</td>
</tr>
<tr>
<td>Department of Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN - Mechanical Engineering</td>
</tr>
<tr>
<td>MSEN - Materials Science &amp; Engr</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Programs referencing this course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CERT-MIND: Materials, Informatics and Design - Certificate</td>
</tr>
</tbody>
</table>

## Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley Schmitt</td>
<td><a href="mailto:schmiae@tamu.edu">schmiae@tamu.edu</a></td>
<td>979-458-9814</td>
</tr>
</tbody>
</table>

## Rationale for Course Edit

The proposed changes are for accreditation purposes.

**Course prefix**

MEEN  

**Course number**

601

**Department**

Mechanical Engineering

**College/School**

College of Engineering

**Academic Level**

Graduate

**Effective term**

2018-2019

**Complete Course Title**

Advanced Product Design

**Abbreviated Course Title**

ADVANCED PRODUCT DESIGN

## Catalog course description

Design methodology, functional design, innovation, parameter analysis, design for reliability, manufacturability and strength; design project.

**Prerequisites and Restrictions**

MEEN 402 or equivalent.

**Concurrent Enrollment**

No

**Should catalog prerequisites / concurrent enrollment be enforced?**

No

**Crosslistings**

No

**Crosslisted With**

No

**Stacked**

No

**Stacked with**

No

**Date Submitted:** 07/25/18 4:48 pm

**Viewing:** MEEN 601: Advanced Product Design

**Last edit:** 07/27/18 2:53 pm

**Changes proposed by:** schmiae

## Approval Path

1. **MEEN Department Head**  
   07/27/18 10:05 am  
   Ying Li (yingli): Approved for MEEN Department Head

2. **Curricular Services Review**  
   07/27/18 2:53 pm  
   Sandra Williams (sandra-williams): Approved for Curricular Services Review

3. **EN Committee Preparer GR**  
   08/02/18 4:37 pm  
   Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR

4. **EN Committee Chair GR**  
   08/08/18 11:26 am  
   Harry Hogan (h-hogan): Approved for EN Committee Chair GR

5. **EN College Dean GR**  
   08/08/18 11:27 am  
   Harry Hogan (h-hogan): Approved for EN College Dean GR

6. **GC Preparer**  
   08/08/18 5:05 pm  
   LaRhesa Johnson (lrjohnson): Approved for GC Preparer

7. **GC Chair**  
   08/08/18 5:11 pm  
   LaRhesa Johnson (lrjohnson): Approved for GC Chair

8. **Faculty Senate Preparer**

9. **Faculty Senate**

10. **Provost II**

11. **President**

12. **Curricular Services**

13. **Banner**
Semester: 3
Contact Hour(s)
(per week):
Lecture: 3
Lab: 0
Other: 0
Total: 3
Credit Hour(s)
Repeatable for credit? No
Three-peat? No
CIP/Fund Code: 1419010006
Default Grade Mode: Letter Grade (G)
Alternate Grade Modes: Satisfactory/Unsatisfactory
Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes
Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.
Non-traditional offerings have been assessed by the department and found to be consistent with traditional offering in learning outcomes.

Hours
Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.
Non-traditional offerings have been assessed by the department and found to be consistent with traditional offering in contact hours.

Will this course be taught as a distance education course? Yes

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.

Yes

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus

MEEN 601 Syllabus - Vinayak.pdf

Syllabus_MEEN601-FA2018.docx
Letters of support or other documentation: No

Additional information: This edit is to convey certification that the non-traditional offerings of the course is consistent with the traditional offering in learning outcomes and contact hours per SACSCOC requirements for Fall 2018. Would like the Effective Term be 2018-2019 but CARS is not allowing this term.

Reviewer Comments: No

Reported to state?: No
Course title and number: MEEN 602: Advanced Product Design
Term (e.g., Fall 200X): Fall 2018
Meeting times and location: TR 2:20-3:35 p.m.; ENPH 205
Recorded lectures for Distance students will be uploaded within 24 hours of the face-to-face course time.

Course Description and Prerequisites
In this course you will learn skills important to success as a design engineer or design researcher. A key focus is systematic design methodology. You will learn about the major phases and steps of a design process as well as common variations on design process models. You also will learn about specific design methods, including techniques for needs analysis, functional modeling, idea generation and decision making. A semester-long project will provide you an opportunity to apply techniques taught in class.

Critical thinking is a point of emphasis in this course. Part of being a successful designer is thinking critically about both the design problem and the methods you will use to solve it. Designers frequently get trapped in common pitfalls such as rushing to develop a technical solution before understanding the design problem, fixating on particular technical solutions, and invoking logical fallacies when making design decisions. Through a combination of critical thinking and the systematic design methodology taught in this course, you should be able to avoid these pitfalls and be more successful as a designer.

Prerequisites: MEEN 402 or equivalent

Learning Outcomes or Course Objectives
Upon completing this course, you should be able to:
1. Understand the role of a given task in the context of an overall design methodology or design process model.
2. Conduct a thorough needs analysis for a design project.
3. Create and interpret abstract representations (functional models, process models, activity diagrams) commonly used to understand a design problem.
4. Create and interpret requirements for a design project.
5. Identify design concepts or embodiments using idea generation methods.
6. Apply systematic decision methods to make design decisions (e.g., concept selection).
7. Interpret and critique proposed design methods or design process models.

Distance Learning Statement: This course is taught face-to-face and through distance learning. The learning objectives and course requirements for the face-to-face and distance learning sections are the same. Contact hours are consistent between both teaching modalities.

Instructor Information
Name: Dr. Vinayak
Telephone number: 979-458-3130
Email address: vinayak@tamu.edu
Office hours: TR 12-1 p.m. in MEOB 411; Appointments – please email the instructor
Office location: MEOB 424
Distance Learning Students: by appointment via phone, Skype, Blackboard Collaborate or other preferred medium.
Textbook and/or Resource Material

No required text. Lecture slides, selected reading materials, and other learning tools will be distributed via eCampus.

Other References:
The following are references I consult most commonly when creating lecture slides. You are not required to purchase any of these. I list them here in case some of you are interested in further information about specific course topics.


Online Resources:
This course will use eCampus to organize learning materials, issue/collect assignments, record grades, etc. Go to [http://ecampus.tamu.edu/](http://ecampus.tamu.edu/) to get started. Further information is given elsewhere in this document.

Grading Policies
Your progress toward achieving the learning outcomes will be assessed in the following ways:

- **Various assignments will be given regularly throughout the semester.** Most of the assignments will be asking you to demonstrate the methods learned in class on some design – be it a new design or redesign type exercise.

- **Grading.** This is primarily a project oriented course and there may not be a notion of a correct answer in some cases, of not all. The grading will be done by the instructor for each phase of the project as well as any HW or quizzes. Additionally, peer grading methodology may be employed toward a minor part of the project to assess individual contributions to the project.

- **Final Letter Grades.** Assigned by instructor based on overall performance in class. And A, B, C, D, and F scale will be used. Final grades will be an aggregate of the specific assignment grades.

**Important:** Note that late assignments of any type are **not accepted** in this course. Quizzes may be rescheduled only in the case of a University-Approved Absence (see Section 7 of this syllabus). HW Assignments may be submitted late if you have a University-Approved Absence that covers three or more calendar days during the time the assignment was released. No late project assignments will be accepted.

**Grading Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60</td>
</tr>
</tbody>
</table>
## Course Topics, Calendar of Activities, Major Assignment Dates

The following schedule of topics is tentative and subject to change as course needs dictate.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Why systemic design methodology?; examination of methodologies/design process models</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Opportunity Identification &amp; Product Planning; Needs Analysis</td>
<td>Project Team Identified</td>
</tr>
<tr>
<td>3</td>
<td>Formulating design objectives and requirements</td>
<td>HW 1 Problem Clarification Assigned</td>
</tr>
<tr>
<td>4</td>
<td>Problem decomposition via functional modeling; activity diagrams and models of intended behavior</td>
<td>HW 1 Problem Clarification Due HW 2 Customer Needs and Specification (HOQ) Assigned</td>
</tr>
<tr>
<td>5</td>
<td>Idea generation methods: 6-3-5, brainstorming, mind mapping, affinity diagrams, TRIZ/TIPS, morphological matrices</td>
<td>HW 2 Customer Needs and Specification (HOQ) Due HW 3 Functional Modeling Assigned</td>
</tr>
<tr>
<td>6</td>
<td>Idea generation methods: 6-3-5, brainstorming, mind mapping, affinity diagrams, TRIZ/TIPS, morphological matrices</td>
<td>HW 3 Functional Modeling Due HW 4 Concept Generation 1 Assigned</td>
</tr>
<tr>
<td>7</td>
<td>The problem of concept selection; intro to decision making; uncertainty and risk in decision making</td>
<td>HW 4 Concept Generation 1 Due HW 5 Concept Generation 2 Assigned</td>
</tr>
<tr>
<td>8</td>
<td>Decision analysis (mathematically rigorous methods for decisions under uncertainty)</td>
<td>HW 5 Concept Generation 2 Due HW 6 Concept Selection Assigned</td>
</tr>
<tr>
<td>9</td>
<td>Non-rigorous decision methods (rating matrix methods; AHP, voting schemes, etc.)</td>
<td>HW 6 Concept Selection Due HW 7 Final Design and Presentation Assigned</td>
</tr>
<tr>
<td>10</td>
<td>Value-driven design</td>
<td>HW 5 Concept Generation 2 Due HW 6 Concept Selection Assigned</td>
</tr>
<tr>
<td>11</td>
<td>Design exploration strategies; &quot;.-ilities&quot; and other metrics</td>
<td>HW 6 Concept Selection Due HW 7 Final Design and Presentation Assigned</td>
</tr>
<tr>
<td>12</td>
<td>Advance design strategies. Topics TBD. Candidate topics include product families/platforms; flexible, modular and upgradable systems; materials in design; impact of advanced manufacturing.</td>
<td>HW 7 Final Design and Presentation Due</td>
</tr>
<tr>
<td>13</td>
<td>Advance design strategies. Topics TBD. Candidate topics include product families/platforms; flexible, modular and upgradable systems; materials in design; impact of advanced manufacturing.</td>
<td>HW 7 Final Design and Presentation Due</td>
</tr>
<tr>
<td>14</td>
<td>Advance design strategies. Topics TBD. Candidate topics include product families/platforms; flexible, modular and upgradable systems; materials in design; impact of advanced manufacturing.</td>
<td>HW 7 Final Design and Presentation Due</td>
</tr>
</tbody>
</table>
Other Pertinent Course Information

**eCampus:**
This course will use the TAMU eCampus as the virtual classroom. Within eCampus, you can find all course-related content and assessments (including but not limited to course materials, videos, assignments, grades, etc.). Recommended browsers for eCampus access are Mozilla Firefox or Google Chrome (Internet Explorer is not recommended). For additional information on supported browsers for eCampus, please visit [http://tx.ag/eCampusBrowserSupport](http://tx.ag/eCampusBrowserSupport).

To login to eCampus:
- Go to [http://ecampus.tamu.edu](http://ecampus.tamu.edu)
- Click the Login button
- Use your TAMU NetID and password to login

Once logged into eCampus, you will see a list of all courses for which you are enrolled in for the semester. To navigate to this course, click on the name of the course. If you have any problems logging into the course, please see the technology support section below.

**Technology Requirements & Recommendations:**

**Technology Requirements:**
- Reliable and frequent access to a computer and to the high-speed Internet. If you do not have frequent and reliable access to a computer with Internet connection, please contact the instructor to discuss your situation and determine an appropriate solution.
- To attend virtual office hours, students will need to make sure they have setup Bb Collaborate to run on their computer(s) and mobile devices. Please visit [http://blackboard.force.com/publickbarticleview?id=kA770000000CbIW](http://blackboard.force.com/publickbarticleview?id=kA770000000CbIW) to check your system requirements and test your connection.
  - It is required to have a microphone and webcam when using Bb Collaborate. It is recommended to have a headset with a microphone, such as a smart phone headset, for the virtual office hours and group collaboration.

**Technology Recommendations:**
- The following may be useful for some students during the semester. The recommendations are informational only—the instructor is neither endorsing the listed services nor certifying their effectiveness.
  - Google Hangouts can also be used to work collaboratively in a virtual environment for group projects. Students will need to make sure they have claimed a TAMU Google account. To claim and learn more about your account, please visit [http://google.tamu.edu](http://google.tamu.edu).
  - Skype ([http://www.skype.com/en/](http://www.skype.com/en/)) provides free video call and videoconferencing software. There are limitations on the free version, but this can be a useful tool within its limitations.
  - There are several solutions for file sharing that are free or that have free membership levels. These include Google Drive ([https://www.google.com/drive/](https://www.google.com/drive/)) and Dropbox ([https://www.dropbox.com/](https://www.dropbox.com/)).
  - There are several recent apps that support various aspects of teamwork. For example, Slack ([https://slack.com/](https://slack.com/)) is a messaging app that provides specialized support for teams (specialized message organization, searchability, file sharing, etc.) and offers a free tier of service.

**Course Support**
In addition to contacting the instructor for course content related questions, there are a variety of campus resources for course support.

**Academic Services Support:**
The Office of Graduate & Professional Studies (OGAPS) offers graduate student services and advocates for graduate education for Texas A&M students who are both on-campus and at a distance. For additional information regarding OGAPS, visit: [http://ogaps.tamu.edu/Home](http://ogaps.tamu.edu/Home)

**Technology Support:**
For technological issues related to eCampus and software, contact the TAMU Help Desk:
- TAMU IT Help Desk:
Website: [http://hdc.tamu.edu/index.php](http://hdc.tamu.edu/index.php) (Online Chat is available)
- Phone: (979) 845-8300
- Email: helpdesk@tamu.edu

The TAMU Help Desk is open 24 hours a day 7 days a week. If your technical problems are unable to be resolved within 48 hours, please contact the instructor for additional assistance.

*Technology issues are not an excuse for missing a course requirement – make sure your computer is configured correctly and address issues well in advance of deadlines.*

**Missed & Late Assignments**
Missed assignments count as a **ZERO** in your grade, except in the case of University approved absences (see below). General late submission policies are given elsewhere in the syllabus (see Course Assignment Specifications). Any deviation from the general policy will be stated in handout for an assignment. *The submission policy stated in a handout overrides policy specified in this document.*

**University-Approved Absences**
Work missed due to absences will only be excused for University-approved activities in accordance with Texas A&M University Student Rules (see [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)). Specific arrangements for make-up work in such instances will be handled on a case-by-case basis. Please be aware that in this class any "injury or illness that is too severe or contagious for the student to attend class" will require "a medical confirmation note from his or her medical provider" even if the absence is for less than 3 days (see 7.1.6.2 Injury or illness less than three days.).

**Class Attendance**
I don’t take attendance. You’re an adult. I presume you are able to decide for yourself whether class attendance will help your grade (or whether you care about your grade in the first place). However, I will not make special accommodations for you if you decide you’d rather hit happy hour or spend an extra hour with your pillow. There will be no making up work missed due to class absences EXCEPT in the case of a University-Approved Absence (see above).

**Collaboration**
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Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

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MEEN 601 : Advanced Product Design

KEY INFO

**Meeting Times:** Tuesdays & Thursdays 2:20 pm – 3:35 pm  
**Location:** ENPH 205  
**Course Credits:** Three (3-0)  
**Prerequisites:** MEEN 402 or equivalent

INSTRUCTION AND RESOURCES

**Instructor:** Dr. Vinayak vinayak@tamu.edu  
**Office Hours:** Appointments – please email the instructor.  
**Local Students:** 12-1 pm in 411 Tuesday & Thursday or by appointment  
**DL students:** By appointment via phone, Skype, Blackboard collaborate or other preferred medium.

**Text:** No required text. Lecture slides, selected reading materials, and other learning tools will be distributed via eCampus.

**Other References:** The following are references I consult most commonly when creating lecture slides. You are not required to purchase any of these. I list them here in case some of you are interested in further information about specific course topics.


**Online Resources:** This course will use eCampus to organize learning materials, issue/collect assignments, record grades, etc. Go to [http://ecampus.tamu.edu/](http://ecampus.tamu.edu/) to get started. Further information is given in elsewhere in this document.

1. **Course Description**

In this course you will learn skills important to success as a design engineer or design researcher. A key focus is systematic design methodology. You will learn about the major phases and steps of a design process as well as common variations on design process models. You also will learn about specific design methods, including techniques for needs analysis, functional modeling, idea generation and decision making. A semester-long project will provide you an opportunity to apply techniques taught in class.

Critical thinking is a point of emphasis in this course. Part of being a successful designer is thinking critically about both the design problem and the methods you will use to solve it. Designers frequently get trapped in common pitfalls such as rushing to develop a technical solution before understanding the design problem, fixating on particular technical solutions, and invoking logical fallacies when making design decisions. Through a combination of critical thinking and the systematic design methodology taught in this course, you should be able to avoid these pitfalls and be more successful as a designer.
2. **Learning Outcomes**

Upon completing this course, you should be able to:

1. Understand the role of a given task in the context of an overall design methodology or design process model.
2. Conduct a thorough needs analysis for a design project.
3. Create and interpret abstract representations (functional models, process models, activity diagrams) commonly used to understand a design problem.
4. Create and interpret requirements for a design project.
5. Identify design concepts or embodiments using idea generation methods.
6. Apply systematic decision methods to make design decisions (e.g., concept selection).
7. Interpret and critique proposed design methods or design process models.

3. **Topics Covered and Tentative Schedule**

   The following schedule of topics is tentative and subject to change as course needs dictate.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Why systematic design methodology?; examination of methodologies / design process models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2</td>
<td>Opportunity Identification &amp; product planning; needs analysis</td>
</tr>
<tr>
<td>Week 3</td>
<td>Formulating design objectives and requirements</td>
</tr>
<tr>
<td>Week 4</td>
<td>Problem decomposition via functional modeling; activity diagrams and models of intended behavior</td>
</tr>
<tr>
<td>Weeks 5 &amp; 6</td>
<td>Idea generation methods: 6-3-5, brainstorming, mind mapping, affinity diagrams, TRIZ/TIPS, morphological matrices</td>
</tr>
<tr>
<td>Week 7</td>
<td>The problem of concept selection; intro to decision making; uncertainty and risk in decision making</td>
</tr>
<tr>
<td>Week 8</td>
<td>Decision analysis (mathematically rigorous methods for decisions under uncertainty)</td>
</tr>
<tr>
<td>Week 9</td>
<td>Non-rigorous decision methods (rating matrix methods; AHP, voting schemes, etc.)</td>
</tr>
<tr>
<td>Week 10</td>
<td>Value-driven design</td>
</tr>
<tr>
<td>Week 11</td>
<td>Design exploration strategies; “-ilities” and other metrics</td>
</tr>
<tr>
<td>Weeks 12 &amp; 14</td>
<td>Advanced design strategies. Topics TBD. Candidate topics include product families/platforms; flexible, modular and upgradable systems; materials in design; impact of advanced manufacturing</td>
</tr>
</tbody>
</table>

4. **Assessment and Grading**

Your progress toward achieving the learning outcomes will be assessed in the following ways:

- **Various assignments will be given regularly throughout the semester.** Most of the assignments will be asking you to demonstrate the methods learned in class on some design – be it a new design or redesign type exercise.

- **Grading.** This is primarily a project oriented course and there may not be a notion of a correct answer in some cases, of not all. The grading will be done by the instructor for each phase of the project as well as any HW or quizzes. Additionally, peer grading methodology may be employed toward a minor part of the project to assess individual contributions to the project.

- **Final Letter Grades.** Assigned by instructor based on overall performance in class. And A, B, C, D, and F scale will be used. Final grades will be an aggregate of the specific assignment grades.

**Important:** Note that late assignments of any type are **not accepted** in this course. Quizzes may be rescheduled only in the case of a University-Approved Absence (see Section 7 of this syllabus). HW Assignments may be submitted late if you have a University-Approved Absence that covers three or more calendar days during the time the assignment was released. No late project assignments will be accepted.
5. Course Technology

eCampus:
This course will use the TAMU eCampus as the virtual classroom. Within eCampus, you can find all course-related content and assessments (including but not limited to course materials, videos, assignments, grades, etc.). Recommended browsers for eCampus access are Mozilla Firefox or Google Chrome (Internet Explorer is not recommended). For additional information on supported browsers for eCampus, please visit http://tx.ag/eCampusBrowserSupport.

To login to eCampus:
- Go to http://ecampus.tamu.edu
- Click the Login button
- Use your TAMU NetID and password to login

Once logged into eCampus, you will see a list of all courses for which you are enrolled in for the semester. To navigate to this course, click on the name of the course. If you have any problems logging into the course, please see the technology support section below.

Technology Requirements & Recommendations:

Technology Requirements:

- Reliable and frequent access to a computer and to the high-speed Internet. If you do not have frequent and reliable access to a computer with Internet connection, please contact the instructor to discuss your situation and determine an appropriate solution.
- To attend virtual office hours, students will need to make sure they have setup Bb Collaborate to run on their computer(s) and mobile devices. Please visit http://blackboard.force.com/publickbarticleview?id=kA770000000CbIW to check your system requirements and test your connection.
  - It is required to have a microphone and webcam when using Bb Collaborate. It is recommended to have a headset with a microphone, such as a smart phone headset, for the virtual office hours and group collaboration.

Technology Recommendations:

The following may be useful for some students during the semester. The recommendations are informational only—the instructor is neither endorsing the listed services nor certifying their effectiveness.

- Google Hangouts can also be used to work collaboratively in a virtual environment for group projects. Students will need to make sure they have claimed a TAMU Google account. To claim and learn more about your account, please visit http://google.tamu.edu.
- Skype (http://www.skype.com/en/) provides free video call and videoconferencing software. There are limitations on the free version, but this can be a useful tool within its limitations.
- There are several solutions for file sharing that are free or that have free membership levels. These include Google Drive (https://www.google.com/drive/) and Dropbox (https://www.dropbox.com/).
- There are several recent apps that support various aspects of teamwork. For example, Slack (https://slack.com/) is a messaging app that provides specialized support for teams (specialized message organization, searchability, file sharing, etc.) and offers a free tier of service.

6. Course Support

In addition to contacting the instructor for course content related questions, there are a variety of campus resources for course support.
**Academic Services Support:**
The Office of Graduate & Professional Studies (OGAPS) offers graduate student services and advocates for graduate education for Texas A&M students who are both on-campus and at a distance. For additional information regarding OGAPS, visit: [http://ogaps.tamu.edu/Home](http://ogaps.tamu.edu/Home)

**Technology Support:**
For technological issues related to eCampus and software, contact the TAMU Help Desk:

- TAMU IT Help Desk:
  - Website: [http://hdc.tamu.edu/index.php](http://hdc.tamu.edu/index.php) (Online Chat is available)
  - Phone: (979) 845-8300
  - Email: helpdesk@tamu.edu

The TAMU Help Desk is open 24 hours a day 7 days a week. If your technical problems are unable to be resolved within 48 hours, please contact the instructor for additional assistance.

_Technology issues are not an excuse for missing a course requirement – make sure your computer is configured correctly and address issues well in advance of deadlines._

7. **Course Policies**

**Missed & Late Assignments**
Missed assignments count as a **ZERO** in your grade, except in the case of University approved absences (see below). General late submission policies are given elsewhere in the syllabus (see Course Assignment Specifications). Any deviation from the general policy will be stated in handout for an assignment. The submission policy stated in a handout overrides policy specified in this document.

**University-Approved Absences**
Work missed due to absences will only be excused for University-approved activities in accordance with Texas A&M University Student Rules (see [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)). Specific arrangements for make-up work in such instances will be handled on a case-by-case basis. Please be aware that in this class any "injury or illness that is too severe or contagious for the student to attend class" will require "a medical confirmation note from his or her medical provider" even if the absence is for less than 3 days (see 7.1.6.2 Injury or illness less than three days.).

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# Course Change Request

**Viewing: MEEN 605 : Gas Dynamics**

Date Submitted: 07/20/18 3:27 pm

Last approved: 08/15/17 3:23 am

Last edit: 07/24/18 1:37 pm

Changes proposed by: schmittae

<table>
<thead>
<tr>
<th>Catalog Pages referencing this course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN - Mechanical Engineering</td>
</tr>
</tbody>
</table>

**Faculty Senate Number**

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebecca Simon</td>
<td><a href="mailto:rebeccasimon@tamu.edu">rebeccasimon@tamu.edu</a></td>
<td>979-458-9196</td>
</tr>
</tbody>
</table>

**Rationale for Course**

The proposed changes are part of a routine curriculum review. The proposed changes are for accreditation purposes.

**Course prefix** MEEN  
**Course number** 605

**Department** Mechanical Engineering

**College/School** College of Engineering

**Academic Level** Graduate

**Academic Level (alternate)** Undergraduate

**Effective term** 2018-2019 2017-2018

**Complete Course Title** Gas Dynamics

**Abbreviated Course Title** GAS DYNAMICS

**Catalog course description**

Overview of gas flows at Mach numbers wherein the fluid can no longer be assumed incompressible; aerospace and mechanical engineering applications ranging from external aerodynamics to internal flows for applications such as propulsion and airframe designs for jets, rockets, missiles and other devices; includes supersonic flows, shock waves, expansion waves, shock tubes, supersonic wind tunnels, gas flows with friction and gas flows with heat transfer.

**Prerequisites and Restrictions**

MEEN 344 or equivalent.

**Concurrent Enrollment** No

**Should catalog prerequisites /** No

**Approval Path**

1. 07/24/18 10:20 am Ying Li (yingli): Approved for MEEN Department Head
2. 07/24/18 1:37 pm Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 08/02/18 4:37 pm Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 08/08/18 11:26 am Harry Hogan (h-hogan): Approved for EN Committee Chair GR
5. 08/08/18 11:27 am Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 08/08/18 5:05 pm LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 08/08/18 5:11 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair

**History**

1. Aug 15, 2017 by Rebecca Simon (rebeccasimon)
concurrent enrollment be enforced?

Crosslistings No Crosslisted With
Stacked No Stacked with

Semester 3 Contact Hour(s) (per week):
Credit Hour(s) 3 Lecture: 3 Lab: 0 Other: 0 Total: 3
Repeatable for credit? No
Three-peat? No
CIP/Fund Code 1419010006
Default Grade Mode Letter Grade (G)
Alternate Grade Modes Satisfactory/Unsatisfactory
Method of instruction Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Non-traditional offerings have been assessed and found to be consistent with traditional offering in learning outcomes.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Non-traditional offerings have been assessed and found to be consistent with traditional offering in contact hours.

Will this course be taught as a distance education course? Yes No

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)
Elective (select program)

Course Syllabus
<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letters of support or other documentation</td>
<td>No</td>
</tr>
<tr>
<td>Additional information</td>
<td>This edit is to convey certification that the non-traditional offerings of the course is consistent with the traditional offering in learning outcomes and contact hours per SACSCOC requirements for Fall 2018. Would like the Effective Term be 2018-2019 but CARS is not allowing this term.</td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td>No</td>
</tr>
<tr>
<td>Reported to state?</td>
<td>No</td>
</tr>
</tbody>
</table>
Gas dynamics, also referred to as compressible flow and/or high-speed aerodynamics, is a subject dealing with gas flows at high enough Mach number wherein the fluid can no longer be assumed incompressible. Such flows occur in many aerospace and mechanical engineering applications ranging from external aerodynamics to internal flows for applications such as propulsion and airframe designs for jets, rockets, missiles, and many other devices. Topics within high-speed aerodynamics include supersonic flows, shock waves, expansion waves, shock tubes, supersonic wind tunnels, gas flows with friction, and gas flows with heat transfer.

Units: 3

Prerequisites: MEEN 344 – Fluid Mechanics (or its equivalent)

Lecture Times: M, W 09:35-10:50 Room: ENPH 205

Website: eCampus

Required Text: *Gas Dynamics – 3rd Edition*  
by James E. A. John and Theo G. Keith  

Grading:  
Exams (3 total) 85%  
Homework 15%

The course grade is based on three mid-term exams and graded problem sets (about 4 – 5 total). The grading will be relative but, in general, the minimum scale will be based on A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, E = <60%. In other words, if you have an 82 average but the class average is 85, you will still get a B.
Homework:
Working homework problems is a necessity for learning and practicing the material. The student is responsible for keeping up with the homework assignments. The homework will not be turned in for a grade. The solutions will be given some time prior to the exam that uses the material on which the problems are based.

Academic Honesty:
Ethical behavior and academic honesty are expected and required of students and even more so of engineers and scientists. Evidence of cheating during an exam or other assignment for credit may result in failure of the entire course for the student(s) in question. Examples of cheating include, but are not limited to: 1) sharing answers or any portion of the problem solutions during an exam, either verbally or on paper; 2) use of cell phones or other electronic communication devices during an exam; 3) talking during an exam, including talking in a language other than English; 4) looking on the paper(s) of the person sitting nearby who is also taking the exam; 5) passing notes or other messages during an exam; and 6) using unauthorized notes, tables, and related materials during an exam.

Aggie Honor Code: "An Aggie does not lie, cheat, or steal, or tolerate those who do."
Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: aggiehonor.tamu.edu

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student:

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

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Absences:
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Course Outline:

Table 1 presents the overall course schedule. The planned exam dates are subject to change upon prior notice of the instructor at least one week in advance of the exam date. The following topics will be covered, roughly in the sequence provided. The suggested homework will be provided on the course website and should be worked as we progress through the course. Solutions will be provided after a suitable amount of time has passed for people keeping pace with the course to practice the homework problems on their own.

- Introduction to compressible flow; ideal gases; conservation of mass; conservation of energy
- momentum equation; 2\textsuperscript{nd} Law of Thermodynamics; wave propagation in elastic media; Mach number; subsonic and supersonic flows
- isentropic flow of a perfect gas; varying area channels; stagnation properties; choked flow
- converging-diverging nozzles and diffusers; applications
- normal shock waves; governing equations for a stationary normal shock wave
- shock waves in a C-D nozzle; supersonic wind tunnels
- moving normal shock waves; reflected normal shock waves
- Shock tubes
- Oblique shock waves; oblique shock reflections
- gradual compressions and expansions; Prandtl-Meyer expansion fans; Prandtl-Meyer flow for a smooth compression
- supersonic oblique-shock diffuser; exit flow for supersonic nozzles; supersonic airfoils
- Fanno flow line; relations of Fanno flow; 1-D flow problems with friction
- Rayleigh flow line; relations of Rayleigh; 1-D flow problems with heat transfer

\textbf{Table 1} Schedule for MEEN 605-600 (or 700), Fall 2018
Learning Outcomes:

At the end of this course, students should be able to:

1. understand basic relations of fluid mechanics and thermodynamics (continuity, momentum, energy, 2nd Law of Thermodynamics) from a control volume standpoint;
2. apply the ideal gas assumption;
3. use 1-D theory to understand basic wave propagation in gases and elastic media;
4. evaluate sound speeds of ideal gases and calculate Mach numbers;
5. categorize the various regimes defined by the Mach number (subsonic, supersonic, hypersonic, etc.);
6. utilize the concept of stagnation temperature and stagnation pressure for understanding and solving basic gas dynamics problems;
7. explain basic flow system behavior using T-s diagrams;
8. evaluate the effect of area changes on 1-D compressible flow;
9. determine when a flow system is choked and what regions should be subsonic, sonic, or supersonic;
10. analyze the flow in nozzles, diffusers, and from pressurized vessels;
11. design (conceptually) basic supersonic wind tunnels;
12. analyze flow systems containing stationary normal shock waves;
13. analyze flow systems containing stationary oblique shock waves;
14. determine the location of a stationary shock wave in a converging-diverging nozzle;
15. calculate the conditions within ducted systems containing moving shock waves;
16. understand the fundamentals of shock tubes;
17. evaluate the pressure and Mach number changes through an expansion fan (Prandtl-Meyer flow);
18. apply oblique shock waves and expansion fans toward the design of supersonic airfoils;
19. apply oblique shock waves and expansion fans to supersonic nozzles and their exhaust streams;
20. perform calculations on a compressible, 1-D internal flow system with friction (optional);
21. analyze compressible, 1-D internal flows with heat transfer (optional);
22. sketch Rayleigh and Fanno lines on a T-s diagram (optional);
23. Use look-up tables for solving basic compressible flow problems.
24. make small computer/EXCEL/MATHCAD programs for solving the basic relations of compressible flow using a computer and/or calculator without having to resort to look-up tables.
Course title and number: MEEN 605: Gas Dynamics
Term (e.g., Fall 200X): Fall 2018
Meeting times and location: MW 9:35-10:50 a.m.; ENPH 205
Recorded lectures for Distance students will be uploaded within 24 hours of the face-to-face course time.

Course Description and Prerequisites
Gas dynamics, also referred to as compressible flow and/or high-speed aerodynamics, is a subject dealing with gas flows at high enough Mach number wherein the fluid can no longer be assumed incompressible. Such flows occur in many aerospace and mechanical engineering applications ranging from external aerodynamics to internal flows for applications such as propulsion and airframe designs for jets, rockets, missiles, and many other devices. Topics within high-speed aerodynamics include supersonic flows, shock waves, expansion waves, shock tubes, supersonic wind tunnels, gas flows with friction, and gas flows with heat transfer.

Prerequisites: MEEN 344 – Fluid Mechanics, or its equivalent

Learning Outcomes or Course Objectives
At the end of this course, students should be able to:

1. understand basic relations of fluid mechanics and thermodynamics (continuity, momentum, energy, 2nd Law of Thermodynamics) from a control volume standpoint;
2. apply the ideal gas assumption;
3. use 1-D theory to understand basic wave propagation in gases and elastic media;
4. evaluate sound speeds of ideal gases and calculate Mach numbers;
5. categorize the various regimes defined by the Mach number (subsonic, supersonic, hypersonic, etc.);
6. utilize the concept of stagnation temperature and stagnation pressure for understanding and solving basic gas dynamics problems;
7. explain basic flow system behavior using T-s diagrams
8. evaluate the effect of area changes on 1-D compressible flow;
9. determine when a flow system is choked and what regions should be subsonic, sonic, or supersonic;
10. analyze the flow in nozzles, diffusers, and from pressurized vessels;
11. design (conceptually) basic supersonic wind tunnels;
12. analyze flow systems containing stationary normal shock waves;
13. analyze flow systems containing stationary oblique shock waves;
14. determine the location of a stationary shock wave in a converging-diverging nozzle;
15. calculate the conditions within ducted systems containing moving shock waves;
16. understand the fundamentals of shock tubes;
17. evaluate the pressure and Mach number changes through an expansion fan (Prandtl-Meyer flow);
18. apply oblique shock waves and expansion fans toward the design of supersonic airfoils;
19. apply oblique shock waves and expansion fans to supersonic nozzles and their exhaust streams
20. perform calculations on a compressible, 1-D internal flow system with friction (optional)
21. analyze compressible, 1-D internal flows with heat transfer (optional)
22. sketch Rayleigh and Fanno lines on a T-s diagram (optional)
23. Use look-up tables for solving basic compressible flow problems.
24. make small computer/EXCEL/MATHCAD programs for solving the basic relations of compressible flow using a computer and/or calculator without having to resort to look-up tables.

Distance Learning Statement: This course is taught face-to-face and through distance learning. The learning objectives and course requirements for the face-to-face and distance learning sections are the same. Contact hours are consistent between both teaching modalities.
Instructor Information

Name: Dr. Eric L. Petersen  
Telephone number: 979-845-1257  
Email address: epetersen@tamu.edu  
Office hours: T 9:30-11:30 a.m.; W 2-4 p.m., or by appointment  
Office location: MEOB 418

Textbook and/or Resource Material


Grading Policies

Grading:  
Exams (3 total) 85%  
Homework 15%

Absences:  
Work missed due to absences will only be excused for University-approved activities in accordance with Texas A&M University Student Rules (see [http://student-rules.tamu.edu/rule7.htm](http://student-rules.tamu.edu/rule7.htm)). Specific arrangements for make-up work in such instances will be handled on a case-by-case basis. In accordance with recent changes to Rule 7, please be aware that in this class any "injury or illness that is too severe or contagious for the student to attend class" will require "a medical confirmation note from his or her medical provider" even if the absence is for less than 3 days (see 7.1.6.2 Injury or illness less than three days.).

Grading Scale

The course grade is based on three mid-term exams and graded problem sets (about 4 – 5 total). The grading will be relative but, in general, the minimum scale will be based on A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, E = <60%. In other words, if you have an 82 average but the class average is 85, you will still get a B.

Course Topics, Calendar of Activities, Major Assignment Dates

Table 1 presents the overall course schedule, and the week-by-week course breakdown is provided below. The planned exam dates are subject to change upon prior notice of the instructor at least one week in advance of the exam date. The following topics will be covered, roughly in the sequence provided. The suggested homework will be provided on the course website and should be worked as we progress through the course. Solutions will be provided after a suitable amount of time has passed for people keeping pace with the course to practice the homework problems on their own.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to compressible flow; ideal gases; conservation of mass; conservation of energy</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>2</td>
<td>momentum equation; 2nd Law of Thermodynamics</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>3</td>
<td>wave propagation in elastic media; Mach number; subsonic and supersonic flows</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>4-5</td>
<td>isentropic flow of a perfect gas; varying area channels; stagnation properties; choked flow</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>6-7</td>
<td>converging-diverging nozzles and diffusers; applications</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>8-9</td>
<td>normal shock waves; governing equations for a stationary normal shock wave</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>10</td>
<td>moving normal shock waves; reflected normal shock waves; shock tubes</td>
<td>Chapter 5</td>
</tr>
</tbody>
</table>
11 Oblique shock waves; oblique shock reflections
12 gradual compressions and expansions; Prandtl-Meyer expansion fans; Prandtl-Meyer flow for a smooth compression
13 supersonic oblique-shock diffuser; exit flow for supersonic nozzles; supersonic airfoils
14-15 Fanno flow line; relations of Fanno flow; 1-D flow problems with friction; Rayleigh flow line; relations of Rayleigh; 1-D flow problems with heat transfer

Chapter 6

Chapter 7

Chapter 8

Chapter 9, 10

Other Pertinent Course Information

Homework:
Working homework problems is a necessity for learning and practicing the material. The student is responsible for keeping up with the homework assignments. The homework will not be turned in for a grade. The solutions will be given some time prior to the exam that uses the material on which the problems are based.

Academic Honesty:
Ethical behavior and academic honesty are expected and required of students and even more so of engineers and scientists. Evidence of cheating during an exam or other assignment for credit may result in failure of the entire course for the student(s) in question. Examples of cheating include, but are not limited to: 1) sharing answers or any portion of the problem solutions during an exam, either verbally or on paper; 2) use of cell phones or other electronic communication devices during an exam; 3) talking during an exam, including talking in a language other than English; 4) looking on the paper(s) of the person sitting nearby who is also taking the exam; 5) passing notes or other messages during an exam; and 6) using unauthorized notes, tables, and related materials during an exam.

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. 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.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: aggiehonor.tamu.edu

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student:

“On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work.”
<table>
<thead>
<tr>
<th>Week</th>
<th>M</th>
<th>W</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/27</td>
<td>8/29</td>
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<tr>
<td>2</td>
<td>9/3</td>
<td>9/5</td>
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<tr>
<td>3</td>
<td>9/10</td>
<td>9/12</td>
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<tr>
<td>4</td>
<td>9/17</td>
<td>9/19</td>
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<tr>
<td>5</td>
<td>9/24</td>
<td>9/26</td>
<td><strong>Exam 1: 9/26</strong></td>
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<tr>
<td>6</td>
<td>10/1</td>
<td>10/3</td>
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<td>10/8</td>
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<td>8</td>
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<td>9</td>
<td>10/22</td>
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<tr>
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<td>10/29</td>
<td>10/31</td>
<td><strong>Exam 2: 10/31</strong></td>
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<tr>
<td>11</td>
<td>11/5</td>
<td>11/7</td>
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<td>12</td>
<td>11/12</td>
<td>11/14</td>
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<tr>
<td>13</td>
<td>11/19</td>
<td>-</td>
<td><strong>Reading Day: 11/21</strong></td>
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<td>14</td>
<td>11/26</td>
<td>11/28</td>
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<tr>
<td>15</td>
<td>-</td>
<td>12/5</td>
<td><strong>Redefined Thurs.: 12/3</strong></td>
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<tr>
<td>16</td>
<td><strong>12/10</strong></td>
<td>-</td>
<td><strong>Exam 3: Mon 12/10, 8:00-10:00</strong></td>
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Course Change Request

Date Submitted: 07/18/18 1:24 pm

Viewing: MEEN 613 : Engineering Dynamics

Last edit: 07/24/18 1:37 pm
Changes proposed by: schmiae

Catalog Pages referencing this course

- Department of Mechanical Engineering
- MEEN - Mechanical Engineering

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley Schmitt</td>
<td><a href="mailto:schmiae@tamu.edu">schmiae@tamu.edu</a></td>
<td>979-458-9814</td>
</tr>
</tbody>
</table>

Rationale for Course Edit

The proposed changes are for accreditation purposes.

Course prefix MEEN  Course number 613
Department Mechanical Engineering
College/School College of Engineering
Academic Level Graduate
Academic Level (alternate) Undergraduate
Effective term 2018-2019

Complete Course Title Engineering Dynamics
Abbreviated Course Title ENGINEERING DYNAMICS

Catalog course description

Three dimensional study of dynamics of particles and rigid bodies and application to engineering problems; introduction to Lagrange equations of motion and Hamilton's principle.

Prerequisites and Restrictions
MEEN 363; MATH 308.

Concurrent Enrollment No
Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings No Crosslisted With
Stacked No Stacked with

In Workflow
1. MEEN Department Head
2. Curricular Services Review
3. EN Committee Preparer GR
4. EN Committee Chair GR
5. EN College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
1. 07/24/18 10:21 am Ying Li (yingli): Approved for MEEN Department Head
2. 07/24/18 1:38 pm Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 08/02/18 4:37 pm Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 08/08/18 11:26 am Harry Hogan (h-hogan): Approved for EN College Dean GR
5. 08/08/18 11:27 am Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 08/08/18 5:05 pm LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 08/08/18 5:12 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
<table>
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<tr>
<th>Semester</th>
<th>3</th>
<th>Contact Hour(s) (per week):</th>
<th>Lecture:</th>
<th>3</th>
<th>Lab:</th>
<th>0</th>
<th>Other:</th>
<th>0</th>
<th>Total</th>
<th>3</th>
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<td>Credit</td>
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</tbody>
</table>

Repeatable for credit?  No
Three-peat?  No
CIP/Fund Code  1411010006
Default Grade Mode  Letter Grade (G)
Alternate Grade Modes  Satisfactory/Unsatisfactory
Method of instruction  Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)  Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Non-traditional offerings have been assessed and found to be consistent with traditional offering in learning outcomes.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Non-traditional offerings have been assessed and found to be consistent with traditional offering in learning outcomes.

Will this course be taught as a distance education course?  Yes  No
I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes  No
Is 100% of this course going to be taught in Texas?  Yes
Will classroom space be needed for this course?  Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Course Syllabus

Syllabus:  Upload syllabus

Upload syllabus  MEEN 613 Syllabus - Fall 2018.pdf
          MEEN 613 Syllabus Fall 2017.pdf
Letters of support or other documentation: No

Additional information: This edit is to convey certification that the non-traditional offerings of the course is consistent with the traditional offering in learning outcomes and contact hours per SACSCOC requirements for Fall 2018. Would like the Effective Term be 2018-2019 but CARS is not allowing this term.

Reviewer Comments: No

Reported to state: No

Key: 10511
Course title and number  MEEN 613: Engineering Dynamics
Term (e.g., Fall 200X)  Fall 2018
Meeting times and location  Tuesday/Thursday 3:55-5:10 p.m.; ENPH 205
Recorded lectures for Distance students will be uploaded within 24 hours of the face-to-face course time.

Course Description and Prerequisites

(3-0): Three dimensional study of dynamics of particles and rigid bodies and application to engineering problems; introduction to Lagrange's equations of motion and Hamilton's principle.

Prerequisites: MEEN 363 or equivalent course in UG Dynamics and Vibrations, MATH 308.

Learning Outcomes or Course Objectives

This course involves rigid body dynamics including kinematics and kinetics. You will be taught to derive models for rigid bodies using Newtonian and variational calculus approaches. You will also be guided on the analysis and numerical solutions of governing equations of motion.

Distance Learning Statement: This course is taught face-to-face and through distance learning. The learning objectives and course requirements for the face-to-face and distance learning sections are the same. Contact hours are consistent between both teaching modalities.

Instructor Information

Name  Dr. Luis San Andrés
Telephone number  979-862-4744
Email address  lisanandres@tamu.edu
Office hours  TR 3:00-3:45 p.m. or by appointment
Office location  MEOB 117

Textbook and/or Resource Material

Text Book: The material for the first test is taken from Dr. Dara Childs’ Dynamics in Engineering Practice (11th Ed), available at the TAMU bookstore. You are welcome to find older copies of the book. The material for the remaining tests will be taken from chapters 6-9 of this book; however, this material is unbound and will be available as a download on eCampus.

Dynamics in Engineering Practice, 11th Ed (only), D.W. Childs & Ap. Conkey, CRC

ME617 Lecture Notes on Vibrations and examples, L. San Andrés, http://rotorlab.tamu.edu
Lectures and supplementary notes will be available in pdf format on the eCampus website. You can concentrate on the lectures versus copying material.

Grading Policies

Course Outline: Two 75' lectures/week. Three (in class) exams and one final exam and a number of group assignments.
GRADING:

<table>
<thead>
<tr>
<th>#</th>
<th>Group Assignments</th>
<th>%</th>
<th>Date</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Group Assignments</td>
<td>20</td>
<td>See Table below</td>
<td>varies</td>
</tr>
<tr>
<td>1</td>
<td>First Exam</td>
<td>20</td>
<td>F Sep 28</td>
<td>L1-L12 – Review UG dynamics</td>
</tr>
<tr>
<td>2</td>
<td>Second Exam</td>
<td>20</td>
<td>R Oct 18</td>
<td>L3-L17 – Lagrange’s EOMs</td>
</tr>
<tr>
<td>3</td>
<td>Third Exam</td>
<td>20</td>
<td>R Nov 01</td>
<td>L18-L23 – 3D vector kinematics</td>
</tr>
<tr>
<td>4</td>
<td>Fourth Exam</td>
<td>20</td>
<td>T Dec 11 1-3 pm</td>
<td>L24-L36 – 3D vector kinetics (FINAL)</td>
</tr>
</tbody>
</table>

| total | 100 | (*) |

All exams are in-class (50'-75') long. (*) Your grade can be > 100. Better than the perfect student. Go for it!

Notes: University justification required for missing Exams. All background material on prerequisites is responsibility of each student. November 17 – Deadline for Q-drop course

# Group Assignments - SCHEDULE

<table>
<thead>
<tr>
<th>#</th>
<th>Group Assignments</th>
<th>Release</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 DOF vibration</td>
<td>09/20</td>
<td>10/04</td>
</tr>
<tr>
<td>2</td>
<td>Kinetics of a mechanism</td>
<td>10/04</td>
<td>10/18</td>
</tr>
<tr>
<td>3</td>
<td>Mechanism with Lagrange multipliers</td>
<td>10/25</td>
<td>11/08</td>
</tr>
<tr>
<td>4</td>
<td>Spinning top</td>
<td>11/15</td>
<td>11/29</td>
</tr>
</tbody>
</table>

Grading Scale

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90.00 - 100%</td>
</tr>
<tr>
<td>B</td>
<td>80.00 - 89.99%</td>
</tr>
<tr>
<td>C</td>
<td>70.00 - 79.99%</td>
</tr>
<tr>
<td>D</td>
<td>60.00 – 69.99%</td>
</tr>
<tr>
<td>F</td>
<td>Less than 60%</td>
</tr>
</tbody>
</table>

Course Topics, Calendar of Activities, Major Assignment Dates

Note: To benefit the most - reading material assigned ahead of a lecture

<table>
<thead>
<tr>
<th>W</th>
<th>(Dates)</th>
<th>Lecture Material (subject to revision)</th>
<th>Reading Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PART 1: Review of undergraduate dynamics</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>08/28</td>
<td>Particle kinematics</td>
<td>Childs Textbook Chap. 2.1-2.7</td>
</tr>
<tr>
<td></td>
<td>08/30</td>
<td>L1 Motion in Cartesian, Polar, and Path coordinates.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L2 Moving between Cartesian, polar, and path coordinates with coordinate transformations</td>
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<tr>
<td></td>
<td></td>
<td>Planar (2D) kinematics of Rigid Bodies</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>L3 Governing Equations &amp; examples</td>
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<tr>
<td>2</td>
<td>09/04</td>
<td>L4 kinematics of rolling without slipping</td>
<td>Childs Textbook Chap. 4</td>
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<tr>
<td></td>
<td>09/06</td>
<td>L5 kinematics of Planar Mechanism – Examples</td>
<td>Childs Textbook Chap. 5.2-5.6a, 5.7, 5.8a</td>
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<td></td>
<td></td>
<td>Planar Kinetics of Rigid Bodies</td>
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<tr>
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<td></td>
<td>L6 Inertia Properties, Force and Moment Eqss of motion, Kinetic Energy of a rigid body</td>
<td></td>
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<tr>
<td>3</td>
<td>09/11</td>
<td>L7 Examples: Rolling without slipping, acceleration of support point of a rigid body.</td>
<td></td>
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<tr>
<td></td>
<td>09/13</td>
<td>L8 Examples: Equations of motion using Newton and Energy Approaches</td>
<td></td>
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<tr>
<td>4</td>
<td>09/18</td>
<td>Students attend to Turbomachinery/Pump Symposia, Houston</td>
<td>Must register in advance</td>
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<tr>
<td>5</td>
<td>24-27</td>
<td>Instructor away to Brazil – IFToMM Conference</td>
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<tr>
<td>Date</td>
<td>Topic</td>
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</tr>
<tr>
<td>09/25</td>
<td>L11 &amp; L12 Planar mechanisms: bars and links with fixed length</td>
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<tr>
<td>09/28</td>
<td>EXAM I (F) 09/28 - content L1-L12</td>
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<td>PART 2: Lagrange’s equation of motion (L_EOM)</td>
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<td>10/02</td>
<td>L13 Deriving Lagrange’s EOMs and examples</td>
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<td>L14 Examples L_EOM With Generalized Coordinates (No kinematic</td>
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<td>L15 Conservation of Momenta from Lagrange’s EOM</td>
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<td>L16 Examples with Algebraic Kinematic Constraints – the Lagrangian</td>
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<td>L17 Accounting for Algebraic Constraints with Lagrange Multipliers</td>
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<td>EXAM II (Thursday) 10/18 content L13-L17</td>
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<td>PART 3: 3D vector kinematics</td>
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<td>10/16</td>
<td>L18 Introduction — Euler’s angle sets A, B, and C</td>
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<td>10/19</td>
<td>L19 Direction-Cosines, Rotation Matrices, and General 3D kinematics</td>
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<td>10/23</td>
<td>L20 &amp; 21 3D kinematics example: rolling wheel axle, rotating</td>
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<td>L22 3D kinematics example (helicopter) and test review</td>
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<td>L23 kinematics alternatives to Euler angles</td>
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<td>EXAM III (Thursday) 11/01 content L18-L23</td>
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<td>PART 3: 3D vector kinetics</td>
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<td>11/06</td>
<td>L24 Governing Force and Moment Equations and Kinetic Energy of a</td>
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<tr>
<td>11/08</td>
<td>Theorem L26 Fixed-Axis-Rotation. Applications of The General</td>
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</table>
|          | Gov. Eqn. L27/28 Examples of Euler’s Equations to General Prescribed-
|          | Motion                                                             |
| 11/13    | L29/30 Moment-Free Motion of an Axisymmetric Body, Euler’s           |
|          | Symmetrical Parameters L31 Stability of Motion of a Spinning Body.   |
|          | L32 Example: The Spinning Top                                        |
| 11/20    | L33 Force and Moment Equations Using a Non-Body-Fixed Coordinate     |
|          | System                                                              |

**Other Pertinent Course Information**

**Method of Class Teaching:**

- Description of material to be covered, provide reading assignments and homework, announce seminars or events of importance, deadlines, etc.
- Lecture material using 95% overheads. Stop each 15 minutes to provide (5 min.) discussion topics for students.
- Provide closure to lecture and advance preview of upcoming material.

**MEEN 613 Engineering Dynamics Policies**

Weekly advance reading assignments are listed in the Class Syllabus (page 2). The lectures broaden the coverage of the class notes and provide examples/insights of analysis. There are significant amounts of subject material mentioned in the lectures that are not in the class notes.

Homework will be assigned (lists of recommended problems will be released on eCampus). Homework is good practice for the exams, and more importantly to acquire practical experience solving
actual industrial problems! **Homework will NOT be graded.**

**Group computational assignments** One assignment per group should be handed for grading. The grade is the same for all group members unless special circumstances arise. No late homework will be accepted. Note that computational assignments make **20%** of your total grade. A group is min 3 and max 6 students. See schedule on page 1.

See Format for **Technical Memorandum** for presentation of assignments. English style and grammar (syntax and semantics) will be graded (~25% of grade).

Students may use MATHLAB, MATHCAD, MAPLE, Visual Basic, or other computational software. A MATLAB Manual is available at the course web site, and you can download it to make your own copies. The assignments and due dates will be posted in the class web site. Dr. San Andrés may also release via e-mail pdf files detailing the solution to similar problems/projects.

**About lectures** The class focuses on the dynamic response of mechanical (structural) systems. The lectures give the fundamentals for mechanical system modeling and analysis, give you simple examples of system analysis and responses, and provide you with useful information for the design and troubleshooting of mechanical systems. There ARE significant amounts of subject material mentioned in the lectures that are **NOT** in the class handouts.

The instructor uses profusely overheads in class. The lecture presentations browse through the notes and DO not cover all details. The instructor will present and work out relevant (simple) examples in class. **The lecture time is too short to attempt to work complicated problems. You must do this on your own along with fellow students.**

**The class notes are not a complete reference for this course.** Attendance and attention to the lectures is therefore needed for success. There will be no excuses for missing exams or homework/assignments (except for University excused absences). Solutions to exams and homework problems will be often delivered electronically.

**Homework (recommended problems) assignments**

eCampus sections (folders) lists the recommended problems. Your course textbook lists the problem statements as well as partial answers for selected problems.

The class web site will also include a number of worked problems. All documents are pdf files and some include video (avi) clips. The worked problems posted will be **REMOVED** after each major exam. Your instructor may also post the problem statements on the course web site.

**Homework (recommended problems from textbook – 11th edition and other sources)**

<table>
<thead>
<tr>
<th>For preparation of Exam 1 (Sept 28)</th>
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<td>L1</td>
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The recommended problems are NOT graded, but they are good practice for the exams. It cannot be emphasized enough that the way to learn how to work problems is **to work problems**. Use the given answer (if known) only to determine that your strategy, your procedure, and your numerical
computations are correct. Working backwards from the answer will not teach you the engineering method, or the principles involved in the problem.

Students should take advantage of office hours to obtain help in developing clear procedures for solution of problems and to improve their understanding of class materials. The instructor will not solve problems for you during office hours; instead he will aid you learn an engineering method for problem solving.

**About Lecture notes and computational programs:** The lectures, handouts and MATHCAD© worksheets used in this course are copyrighted. By “handouts,” I mean all materials generated for this class, which include but are not limited to syllabi, lecture notes, computer programs, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy or modify the handouts, unless I expressly grant permission.

**About plagiarism:** As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the TAMU Student Rules, section “Scholastic Dishonesty.”

**About Office Hours:**
The purpose of office hours is to encourage individual interaction between the student and the instructor. The instructor is available to discuss not only questions related to the course, but other issues where I can help you as a professional engineer and educator. Please take advantage of office hours. To utilize this time efficiently, students should prepare by organizing questions in advance. Students should seek help in developing clear procedures for solution of problems and to improve their understanding of class materials. I will not solve problems for you. Instead, I will help you learn an engineering method for problem solving.

I am willing to help you at times other than office hours without an appointment; however, just like you, I have responsibilities other than MEEN 613 and must budget certain times to meet those responsibilities. So please do not be offended if I am in the office but cannot meet with you.

**The use of e-mails** for communication with your instructor is acceptable. I usually receive three types of messages:

a) a request to schedule a meeting at other times than office hours,
b) questions related to the impending homework or computational assignment,
c) questions related to the study material for an exam.

I reply promptly to all messages (usually within the next working hour if I am in town). If I cannot be found in my Campus Office, please call 862-4744 (no texting). I spend most of my time at the Turbomachinery Laboratory (FM2818 and George Bush).

**When will the instructor be absent? Schedule for make up classes**
This Fall I have scheduled attending to several technical Conferences. There will be no class on the dates noted below. Make up recitations for the lost classes will be scheduled within a week and be conducted at nighttime (6 to 8 p.m.). The instructor will announce the exact date and meeting place.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Students are encouraged to attend the event</th>
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<tbody>
<tr>
<td>September 17-20</td>
<td>Houston, Turbomachinery/Pump Symposium</td>
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<tr>
<td>September 23-27</td>
<td>Rio de Janeiro, Brazil, otordynamics IFToMM Conference</td>
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<tr>
<td>November 14-16</td>
<td>Seoul, 2018 Korea Rotating Machinery Symposium (KRMS)</td>
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<td>November 23-29</td>
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**Recommended URL resources**

**MIT Open Course Dynamics**

**Real life Engineering Examples in Dynamics:** Download digital book with examples
**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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Academic Integrity**

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

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

It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty ([Student Rule 20. Scholastic Dishonesty, http://student-rules.tamu.edu](http://student-rules.tamu.edu)). New procedures and policies have been adopted effective September 1, 2004. Details are available through the Office of the Aggie Honor System ([http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)). An excerpt from the Philosophy & Rationale section states: "Apathy or acquiescence in the presence of academic dishonesty is not a neutral act -- failure to confront and deter it will reinforce, perpetuate, and enlarge the scope of such misconduct. Academic dishonesty is the most corrosive force in the academic life of a university."
SUMMARY OF THIS MEMO

This memorandum explains (and demonstrates) how to write a technical memorandum (TM). Webster's defines a memorandum as a "usually brief communication written for interoffice circulation... a communication that contains directive, advisory, or informative matter". Adding the adjective "technical" implies a certain degree of structure both in format and content. A TM is a concise and well written communication approximately three to six pages long that:

- defines a task,
- specifies the objectives of the task,
- identifies and outlines a solution method and/or an experimental procedure,
- reports and discusses the results of implementing the solution and/or the estimated parameters from the measurements, and
- provides conclusions and recommendations.

It is often necessary to include an informal appendix (sometimes handwritten) containing the data, sample calculations, etc. to support statements made in 4 and 5. Description of the various parts of a TM follow.

HEADING

The heading should follow the format of this memo. The tech memo must be dated. (All correspondence, analysis, etc. should be dated.) The heading of a memo contains parts for "TO", "FROM", and "SUBJECT". The TO part identifies the recipient of the memo by name and title, i.e. Dr. San Andrés or responsible TA. The FROM part identifies you by name and course/section number; e.g., Joe Studious, Student. The SUBJECT part is equivalent to a title and tells what the memo is about as completely and concisely as possible.

EXECUTIVE SUMMARY

Concisely define the task in terms of the objectives of the assignment and specify any restrictions/constraints. Summarize the major findings, conclusions and difficulties found. Sound engineering practice demands a precise usage of technical terms and short sentence structure. This is not an introduction; do not give a lot of background and motivation. The recipient of the TM is knowledgeable about your work and you do not need to explain to him/her why you are doing it. You must explain exactly what you are going to do, but you do not need to give the motivation for the project. (The total length of this section should not exceed 200 words).

METHOD

Describe the method you used to solve the problem (theoretical, experimental, or both) including any major assumptions, derivation of important equations, and/or experimental procedures. Describe the physics of the problem, show assumptions for the physical model and the governing equations of motion, including boundary and initial conditions. Provide a concise nomenclature to follow.

This section almost always requires some sketches or drawings, i.e. figures. The main text should always refer to the figures before they appear. The writer needs to explain the items depicted with attention to trends and important characteristics. Figures should be referred in the text in ascending number and accompanied by meaningful and explanatory captions. Figures with multiple curves should have clear symbols (and keywords) differentiating them.

PROCEDURE

1 Type font should be maximum 11 points, 1 ½ spaces and with 1 inch margins in 8 ½ by 11 inch pages.
Here you must describe in a logical manner the procedures for analysis, exact or numerical, for example. Provide statements on the validity of the solution procedure highlighting advantages or shortcomings. For numerical solutions, you must provide statements on the accuracy, convergence and stability of the results.

RESULTS and DISCUSSION
All results are to be presented in the units of actual measurement or calculation, either English or SI, with final values in alternative units given in parenthesis.
Present the calculated results in a form best suited to help the reader understand their significance in light of the stated objectives. This will usually be graphs or curves, supplemented by tables highlighting identified (measured) or calculated values. Present all of the significant findings of the study and explain any important observations, trends, or limitations. Discuss how these observations (results) will lead to your final and important conclusions.

CONCLUSIONS
Always state your conclusions. Conclusion must address the purpose of the assignment. Some students (and professionals) do not want to risk making erroneous conclusions so they waffle on stating conclusions. For example, they may list several possible conclusions, but leave it up to the reader to choose one. You are educated and qualified to analyze the data (results) and draw conclusions from it. As a future engineer, your boss will think enough of your qualifications to pay you a good salary, and he/she expects conclusions and sound recommendations. The only exception is the case in which the data does not support a conclusion; and in this exceptional case, the method used is inadequate for the purpose and you should so state.

REFERENCES
List all references in your main text according to the ASME format, see: http://www.asme.org/Publications/ConfProceedings/Author/References_2.cfm
In general, references must contain the authors' names (last-first initial), year of publication, title, journal or periodical name, volume and page numbers. All material found on internet sites must be clearly acknowledged, including any graphs copied.

FINAL NOTES:
Your main report MUST NOT include a copy of your computer program. In particular, inserting MAPLE or MATLAB printouts is NOT allowed. A computer program OUTPUT may be included as an APPENDIX and must contain detailed text or comments for any reader to understand your important work.
Figures and Tables should always be inserted AFTER text citing them. In particular, Figures and Tables must contain COMPLETE captions, i.e. descriptive titles (full sentences). Labels in Figures (X,Y axes) must display appropriate physical units, for example, X: distance [meter], Y: acceleration [meter/s²]. Point deductions will be taken for incomplete figures and tables.
Most technical papers and reports are written in the third person, i.e. they are impersonal. Phrases like “We did” or “I have found,” etc. Incidentally, avoid writing with passive voice and in the past tense, it is bad English!

BUY ME or DUST ME OFF!
The Elements of Style, by W. Strunk and E.B. White:
"Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should not have unnecessary lines and a machine no unnecessary parts. This requires NOT that the writer makes all his sentences short, or that he avoids all detail and treats his subjects only in outline, but that every word tells."

From The Real Thing, by Tom Stoppard
Words are innocent, neutral, precise, standing for this, describing that, meaning the other, so if you look after them you can build bridges across incomprehension and chaos. But when they get their corners knocked off, they are no good anymore.
I don’t think writers are sacred, but words are. They deserve respect. If you get the right ones in the right order, you can nudge the world a little or make a poem which children will speak for you when you’re dead.
MEEN 613 – Engineering Dynamics  

Instructor: Dr. Luis San Andrés, MEOB 117, Phone: 862-4744, LSanAndres@tamu.edu

Class Time: ENPH 205 T-R 3:55-5:10 pm

Office hours: MEOB 117 T-R 5:15-6:00 pm or by appointment

Catalog Course Description (3-0): Three dimensional study of dynamics of particles and rigid bodies and application to engineering problems; introduction to Lagrange’s equations of motion and Hamilton’s principle.

Prerequisites: MEEN 363 or equivalent course in UG Dynamics and Vibrations, MATH 308.

OBJECTIVES: This course involves rigid body dynamics including kinematics and kinetics. You will be taught to derive models for rigid bodies using Newtonian and variational calculus approaches. You will also be guided on the analysis and numerical solutions of governing equations of motion.

Text Book: The material for the first test is taken from Dr. Dara Childs’ Dynamics in Engineering Practice (11th Ed), available at the TAMU bookstore. You are welcome to find older copies of the book. The material for the remaining tests will be taken from chapters 6-9 of this book; however, this material is unbound and will be available as a download on eCampus.


ME617 Lecture Notes on Vibrations and examples, L. San Andrés, http://rotorlab.tamu.edu

Lectures and supplementary notes will be available in pdf format on the eCampus web site. You can concentrate on the lectures versus copying material.

Course Outline: Two 75' lectures/week. Three (in class) exams and one final exam and a number of group assignments.

GRADING:

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<td>L1-L12 – Review UG dynamics</td>
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<td>R Oct 19</td>
<td>L3-L17 – Lagrange’s EOMs</td>
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<td>R Nov 02</td>
<td>L18-L23 – 3D vector kinematics</td>
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<td>L24-L36 – 3D vector kinetics (FINAL)</td>
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All exams are in-class (50'-75') long. (*) Your grade can be > 100. Better than the perfect student. Go for it!

Notes: University justification required for missing Exams. All background material on prerequisites is responsibility of each student. November 17 – Deadline for Q-drop course

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<tr>
<th>#</th>
<th>Group Assignments - SCHEDULE</th>
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<th>Due Date</th>
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<tr>
<td>1</td>
<td>2 DOF vibration</td>
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<td>10/05</td>
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<td>Kinetics of a mechanism</td>
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<td>3</td>
<td>Mechanism with Lagrange multipliers</td>
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<td>11/09</td>
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<td>4</td>
<td>Spinning top</td>
<td>11/16</td>
<td>12/05</td>
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MEEN 613, Class Syllabus

L. San Andrés - Instructor

Note: To benefit the most - reading material assigned ahead of a lecture

<table>
<thead>
<tr>
<th>W (Dates)</th>
<th>Lecture Material (subject to revision)</th>
<th>Reading Assignment</th>
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<tr>
<td></td>
<td><strong>PART 1: Review of undergraduate dynamics</strong></td>
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<td>1 08/29</td>
<td>Particle kinematics</td>
<td>Childs Textbook Chap. 2.1-2.7</td>
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<td>08/31</td>
<td>L1 Motion in Cartesian, Polar, and Path coordinates.</td>
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<td>L2 Moving between Cartesian, polar, and path coordinates with coordinate transformations.</td>
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<td><strong>Planar (2D) kinematics of Rigid Bodies</strong></td>
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<td>L3 Governing Equations &amp; examples</td>
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<td>2 09/05</td>
<td>L4 kinematics of rolling without slipping</td>
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<td>09/07</td>
<td>L5 kinematics of Planar Mechanism – Examples</td>
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<td><strong>Planar Kinetics of Rigid Bodies</strong></td>
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<td>L6 Inertia Properties, Force and Moment Eqns of motion, Kinetic Energy of a rigid body</td>
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<td>3 09/12</td>
<td>Students attend to Turbomachinery/Pump Symposia, Houston</td>
<td>Must register in advance</td>
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<td><strong>PART 2: Lagrange's equation of motion (L, EOM)</strong></td>
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<td>4 09/19</td>
<td>L8 Examples: Equations of motion using Newton and Energy Approaches</td>
<td>A1 due 10/05</td>
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<td>09/21</td>
<td>L9 &amp; L10 2 DOF Examples on planar kinetics: rotor and pendula</td>
<td>A2: mechanism with Lagrange multipliers</td>
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<td><strong>PART 3: 3D vector kinematics</strong></td>
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<td>5 09/26</td>
<td>L11 &amp;L12 Planar mechanisms: bars and links with fixed length</td>
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<td>5 09/28</td>
<td><strong>EXAM I (Thursday) 09/28</strong> - content L1-L12</td>
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<td>6 10/03</td>
<td>L13 Deriving Lagrange’s EOMs and examples</td>
<td>A3 due 10/19</td>
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<td>10/05</td>
<td>L14 Examples L_EOM With Generalized Coordinates (No kinematic constraints).</td>
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<td>7 10/10</td>
<td>L15 Conservation of Momenta from Lagrange’s EOM</td>
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<td>10/12</td>
<td>L16 Examples with Algebraic Kinematic Constraints – the Lagrangian multiplier (λ)</td>
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<td>8 10/19</td>
<td><strong>EXAM II (Thursday) 10/21</strong> content L13-L17</td>
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<td><strong>PART 3: 3D vector kinetics</strong></td>
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<td>8 10/17</td>
<td>L18 Introduction — Euler's angle sets A, B, and C.</td>
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<td>9 10/24</td>
<td>L20 &amp; 21 3D kinematics example: rolling wheel axle, rotating assembly</td>
<td>A4: spinning top</td>
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<td>L22 3D kinematics example (helicopter) and test review</td>
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<td>10/31</td>
<td>L23 kinematics alternatives to Euler angles</td>
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<td>11/02</td>
<td><strong>EXAM III (Thursday) 11/02</strong> content L18-L23</td>
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<td><strong>PART 3: 3D vector kinetics</strong></td>
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<td>12 11/14</td>
<td>L29/30 Moment-Free Motion of an Axisymmetric Body, Euler’s Symmetrical Parameters</td>
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<td>11/16</td>
<td>L31 Stability of Motion of a Spinning Body.</td>
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<tr>
<td>13 11/21</td>
<td>L32 Example: The Spinning Top</td>
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<tr>
<td>Nov 24-25</td>
<td>Thanksgiving</td>
<td></td>
</tr>
<tr>
<td>14 11/28</td>
<td>L34 Example: The spinning coin (non holonomic constraints)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L35 &amp; 36 More rigid-body systems: particle in spacecraft &amp; dual-spin satellite</td>
<td></td>
</tr>
<tr>
<td>15 12/05</td>
<td>CLOSURE</td>
<td>A4 due 12/05</td>
</tr>
<tr>
<td>16 12/12</td>
<td><strong>EXAM IV (Tuesday) 1-3 pm</strong> content L24-L36</td>
<td></td>
</tr>
</tbody>
</table>
**Method of Class Teaching:**

- Description of material to be covered, provide reading assignments and homework, announce seminars or events of importance, deadlines, etc.
- Lecture material using 95% overheads. Stop each 15 minutes to provide (5 min.) discussion topics for students.
- Provide closure to lecture and advance preview of upcoming material.

**MEEN 613 ENGINEERING DYNAMICS**

**POLICIES**

**Weekly advance reading assignments** are listed in the Class Syllabus (page 2). The lectures broaden the coverage of the class notes and provide examples/insights of analysis. There are significant amounts of subject material mentioned in the lectures that are not in the class notes.

**Homework** will be assigned (lists of recommended problems will be released on eCampus). Homework is good practice for the exams, and more importantly to acquire practical experience solving actual industrial problems! **Homework will NOT be graded.**

**Group computational assignments** One assignment per group should be handed for grading. The grade is the same for all group members unless special circumstances arise. No late homework will be accepted. Note that computational assignments make 30% of your total grade. A group is min 3 and max 6 students. See schedule on page 1.

See Format for **Technical Memorandum** for presentation of assignments. English style and grammar (syntax and semantics) will be graded (~25% of grade).

Students may use MATHLAB, MATHCAD, MAPLE, Visual Basic, or other computational software. A MATLAB Manual is available at the course web site, and you can download it to make your own copies. The assignments and due dates will be posted in the class web site. Dr. San Andrés may also release via e-mail pdf files detailing the solution to similar problems/projects.

**About lectures** The class focuses on the dynamic response of mechanical (structural) systems. The lectures give the fundamentals for mechanical system modeling and analysis, give you simple examples of system analysis and responses, and provide you with useful information for the design and troubleshooting of mechanical systems. There ARE significant amounts of subject material mentioned in the lectures that are NOT in the class handouts.

The instructor uses profusely overheads in class. The lecture presentations browse through the notes and DO not cover all details. The instructor will present and work out relevant (simple) examples in class. **The lecture time is too short to attempt to work complicated problems. You must do this on your own along with fellow students.**

**The class notes are not a complete reference for this course.** Attendance and attention to the lectures is therefore needed for success. There will be no excuses for missing exams or homework/assignments (except for University excused absences). Solutions to exams and homework problems will be often delivered electronically.

**Homework (recommended problems) assignments**

eCampus sections (folders) lists the recommended problems. Your course textbook lists the problem statements as well as partial answers for selected problems.

The class web site will also include a number of worked problems. All documents are pdf files and some include video (avi) clips. The worked problems posted will be **REMOVED** after each major exam. Your instructor may also post the problem statements on the course web site.
Homework (recommended problems from textbook – 11th edition and other sources)

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>2.4, 2.10, 2.16</td>
</tr>
<tr>
<td>L2</td>
<td>2.5, 2.11, 2.20</td>
</tr>
<tr>
<td>L3</td>
<td>4.1, 4.3, 4.7</td>
</tr>
<tr>
<td>L4</td>
<td>4.10, 4.11, 4.14, 4.22</td>
</tr>
<tr>
<td>L5</td>
<td>4.28, 4.33, 4.38</td>
</tr>
<tr>
<td>L6</td>
<td>5.12, 5.17a-b, 5.34, 5.36</td>
</tr>
<tr>
<td>L7</td>
<td>5.32, 5.33, 5.31, 5.27, 5.29</td>
</tr>
<tr>
<td>L8</td>
<td>5.39, 5.43, 5.46</td>
</tr>
<tr>
<td>L9</td>
<td>5.55, 5.57, 5.62, 5.70</td>
</tr>
<tr>
<td>L10</td>
<td>5.67, 5.69, 5.71</td>
</tr>
<tr>
<td>L11</td>
<td>5.73, 5.77, 5.78</td>
</tr>
<tr>
<td>L12</td>
<td>5.83, 5.85, 5.87</td>
</tr>
</tbody>
</table>

The recommended problems are NOT graded, but they are good practice for the exams. It cannot be emphasized enough that the way to learn how to work problems is to work problems. Use the given answer (if known) only to determine that your strategy, your procedure, and your numerical computations are correct. Working backwards from the answer will not teach you the engineering method, or the principles involved in the problem.

Students should take advantage of office hours to obtain help in developing clear procedures for solution of problems and to improve their understanding of class materials. The instructor will not solve problems for you during office hours; instead he will aid you learn an engineering method for problem solving.

About Lecture notes and computational programs: The lectures, handouts and MATHCAD© worksheets used in this course are copyrighted. By “handouts,” I mean all materials generated for this class, which include but are not limited to syllabi, lecture notes, computer programs, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy or modify the handouts, unless I expressly grant permission.

About plagiarism: As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the TAMU Student Rules, section “Scholastic Dishonesty.”

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**The use of e-mails** for communication with your instructor is acceptable. I usually receive three types of messages:

a) a request to schedule a meeting at other times than office hours,
b) questions related to the impending homework or computational assignment,
c) questions related to the study material for an exam.

I reply promptly to all messages (usually within the next working hour if I am in town). If I cannot be found in my Campus Office, please call 862-4744 (no texting). I spend most of my time at the Turbomachinery Laboratory (FM2818 and George Bush).

**When will the instructor be absent? Schedule for make up classes**
This Fall I have scheduled attending to several technical Conferences. There will be no class on the dates noted below. Make up recitations for the lost classes will be scheduled within a week and be conducted at nighttime (6 to 8 p.m.). The instructor will announce the exact date and meeting place.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 12-14</td>
<td>Houston, Turbomachinery/Pump Symposium</td>
<td>Students are encouraged to attend the event.</td>
</tr>
<tr>
<td>November 02</td>
<td>Pump Symp Advisory Committee Meeting, Houston</td>
<td></td>
</tr>
<tr>
<td>November 09</td>
<td>Turbomachinery Symp Advisory Committee Meeting, Houston</td>
<td></td>
</tr>
</tbody>
</table>

**Recommended URL resources**

**MIT Open Course** [Dynamics](#)

**Real life Engineering Examples in Dynamics**: Download digital book with examples
SUMMARY OF THIS MEMO
This memorandum explains (and demonstrates) how to write a technical memorandum (TM). Webster’s defines a memorandum as a “usually brief communication written for interoffice circulation . . . a communication that contains directive, advisory, or informative matter”. Adding the adjective “technical” implies a certain degree of structure both in format and content. A TM is a concise and well written communication approximately three to six pages long that:
- defines a task,
- specifies the objectives of the task,
- identifies and outlines a solution method and/or an experimental procedure,
- reports and discusses the results of implementing the solution and/or the estimated parameters from the measurements, and
- provides conclusions and recommendations.

It is often necessary to include an informal appendix (sometimes handwritten) containing the data, sample calculations, etc. to support statements made in 4 and 5. Description of the various parts of a TM follow.

HEADING
The heading should follow the format of this memo. The tech memo must be dated. (All correspondence, analysis, etc. should be dated.) The heading of a memo contains parts for “TO”, “FROM”, and “SUBJECT”. The TO part identifies the recipient of the memo by name and title, i.e. Dr. San Andrés or responsible TA. The FROM part identifies you by name and course/section number; e.g., Joe Studious, Student. The SUBJECT part is equivalent to a title and tells what the memo is about as completely and concisely as possible.

EXECUTIVE SUMMARY
Concisely define the task in terms of the objectives of the assignment and specify any restrictions/constraints. Summarize the major findings, conclusions and difficulties found. Sound engineering practice demands a precise usage of technical terms and short sentence structure. This is not an introduction; do not give a lot of background and motivation. The recipient of the TM is knowledgeable about your work and you do not need to explain to him/her why you are doing it. You must explain exactly what you are going to do, but you do not need to give the motivation for the project. (The total length of this section should not exceed 200 words).

METHOD
Describe the method you used to solve the problem (theoretical, experimental, or both) including any major assumptions, derivation of important equations, and/or experimental procedures. Describe the physics of the problem, show assumptions for the physical model and the governing equations of motion, including boundary and initial conditions. Provide a concise nomenclature to follow.

This section almost always requires some sketches or drawings, i.e. figures. The main text should always refer to the figures before they appear. The writer needs to explain the items depicted with attention to trends and important characteristics. Figures should be referred in the text in ascending number and accompanied by meaningful and explanatory captions. Figures with multiple curves should have clear symbols (and keywords) differentiating them.

PROCEDURE
Here you must describe in a logical manner the procedures for analysis, exact or numerical, for example. Provide statements on the validity of the solution procedure highlighting advantages or shortcomings. For numerical solutions, you must provide statements on the accuracy, convergence and stability of the results.

1 Type font should be maximum 11 points, 1 ½ spaces and with 1 inch margins in 8 ½ by 11 inch pages.
RESULTS and DISCUSSION

All results are to be presented in the units of actual measurement or calculation, either English or SI, with final values in alternative units given in parenthesis.

Present the calculated results in a form best suited to help the reader understand their significance in light of the stated objectives. This will usually be graphs or curves, supplemented by tables highlighting identified (measured) or calculated values. Present all of the significant findings of the study and explain any important observations, trends, or limitations. Discuss how these observations (results) will lead to your final and important conclusions.

CONCLUSIONS

Always state your conclusions. Conclusion must address the purpose of the assignment. Some students (and professionals) do not want to risk making erroneous conclusions so they waffle on stating conclusions. For example, they may list several possible conclusions, but leave it up to the reader to choose one. You are educated and qualified to analyze the data (results) and draw conclusions from it. As a future engineer, your boss will think enough of your qualifications to pay you a good salary, and he/she expects conclusions and sound recommendations. The only exception is the case in which the data does not support a conclusion; and in this exceptional case, the method used is inadequate for the purpose and you should so state.

REFERENCES

List all references in your main text according to the ASME format, see:
http://www.asme.org/Publications/ConfProceedings/Author/References_2.cfm
In general, references must contain the authors’ names (last-first initial), year of publication, title, journal or periodical name, volume and page numbers. All material found on internet sites must be clearly acknowledged, including any graphs copied.

FINAL NOTES:

Your main report MUST NOT include a copy of your computer program. In particular, inserting MAPLE or MATLAB printouts is NOT allowed. A computer program OUTPUT may be included as an APPENDIX and must contain detailed text or comments for any reader to understand your important work.

Figures and Tables should always be inserted AFTER text citing them. In particular, Figures and Tables must contain COMPLETE captions, i.e. descriptive titles (full sentences). Labels in Figures (X,Y axes) must display appropriate physical units, for example, X: distance [meter], Y: acceleration [meter/s²]. Point deductions will be taken for incomplete figures and tables.

Most technical papers and reports are written in the third person, i.e. they are impersonal. Phrases like “We did” or “I have found,” etc. Incidentally, avoid writing with passive voice and in the past tense, it is bad English!

BUY ME or DUST ME OFF!

*The Elements of Style*, by W. Strunk and E.B. White:

"Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should not have unnecessary lines and a machine no unnecessary parts. This requires NOT that the writer makes all his sentences short, or that he avoids all detail and treats his subjects only in outline, but that every word tells."

From *The Real Thing*, by Tom Stoppard

Words are innocent, neutral, precise, standing for this, describing that, meaning the other, so if you look after them you can build bridges across incomprehension and chaos. But when they get their corners knocked off, they are no good anymore.

I don’t think writers are sacred, but words are. They deserve respect. If you get the right ones in the right order, you can nudge the world a little or make a poem which children will speak for you when you’re dead.
Course Change Request

Course: MEEN 626: Lubrication Theory

Rationale for Course Change:
The proposed changes are for accreditation purposes.

Course prefix: MEEN  
Course number: 626

Department: Mechanical Engineering
College/School: College of Engineering
Academic Level: Graduate
Effective term: 2018-2019

Complete Course Title: Lubrication Theory
Abbreviated Course Title: LUBRICATION THEORY

Catalog course description:
Development of Reynolds equation from Navier-Stokes equation for study of hydrodynamic lubrication theory as basis for bearing design; application to simple thrust and journal bearings and pads of various geometries; hydrostatic lubrication, floating ring bearing, compressible fluid (gas) lubrication, grease lubrication, dynamically loaded bearings, half speed whirl and stability.

Prerequisites and Restrictions:
MEEN 344 or equivalent; MATH 308.

Concurrent Enrollment: No

Should catalog prerequisites/concurrent enrollment be enforced? No

Crosslistings: No

Contact(s):

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley Schmitte</td>
<td><a href="mailto:schmittae@tamu.edu">schmittae@tamu.edu</a></td>
<td>979-458-9814</td>
</tr>
</tbody>
</table>

In Workflow:
1. MEEN Department Head
2. Curricular Services Review
3. EN Committee Preparer GR
4. EN Committee Chair GR
5. EN College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path:
1. 07/24/18 10:21 am Ying Li (yingli): Approved for MEEN Department Head
2. 07/24/18 1:39 pm Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 08/02/18 4:37 pm Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 08/08/18 11:26 am Harry Hogan (h-hogan): Approved for EN Committee Chair GR
5. 08/08/18 11:27 am Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 08/08/18 5:06 pm LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 08/08/18 5:12 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
<table>
<thead>
<tr>
<th>Stacked</th>
<th>No</th>
<th>Stacked with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>3</td>
<td>Contact Hour(s)</td>
</tr>
<tr>
<td>Credit Hour(s)</td>
<td>(per week):</td>
<td>Lab: 0</td>
</tr>
</tbody>
</table>

Repeatable for credit? No

Three-peat? No

CIP/Fund Code: 1419010006

Default Grade Mode: Letter Grade (G)

Alternate Grade Modes: Satisfactory/Unsatisfactory

Method of instruction: Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Non-traditional offerings have been assessed and found to be consistent with traditional offering in learning outcomes.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Non-traditional offerings have been assessed and found to be consistent with traditional offering in terms of contact hours.

Will this course be taught as a distance education course? Yes No

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus
<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information</td>
<td>This edit is to convey certification that the non-traditional offerings of the course is consistent with the traditional offering in learning outcomes and contact hours per SACSCOC requirements for Fall 2018. Would like the Effective Term be 2018-2019 but CARS is not allowing this term.</td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td></td>
</tr>
<tr>
<td>Reported to state?</td>
<td>No</td>
</tr>
</tbody>
</table>

Key: 10524
MEEN 626 - Lubrication Theory: Syllabus FALL 16

Instructor: Dr. Luis San Andrés, MEOB 118, Phone: 862-4744, LSanAndres@tamu.edu

Class Time: PETR 104 MWF 3:00-3:50 pm
Office hours: MW 2 – 3 pm MEOB 117 or by appointment

Catalog Course Description: Development of Reynolds Equation from Navier Stokes equations for study of hydrodynamic lubrication theory as the basis for bearing design; applications to simple thrust and journal bearings and pads of various geometries; hydrostatic lubrication, floating ring bearings, compressible fluid (gas) lubrication, grease lubrication, dynamically loaded bearings, half speed whirl and stability.

Prerequisites: MATH 308, MEEN 345 or equivalent.

OBJECTIVES: To introduce the fundamental physical principles of the classical theory of hydrodynamic lubrication, to learn about the applications of bearings and seals in oil & gas rotating machinery, and to introduce process fluid film bearings for high speed applications. The class material emphasizes the understanding of physical principles and the effects of fluid film bearings on the dynamics of rotating machinery.

Text Book: San Andrés, L. Modern Lubrication Theory, Class Notes (~450 pages) available at URL site http://rotorlab.tamu.edu/me626/default.htm


• Selected journal papers (mandatory reading) listed in Index of Notes (pages 7-ff Syllabus).
• TRIBOLOGY SOFTWARE http://www.tribology-abc.com/calculators/window.htm

Course Outline: Three 50’ lectures/week. Group homework assigned & graded. Two (in class) exams and a group selected project.

EXAMS: 1: Design of simple thrust and journal bearings, (FRI Oct 7) 2: Rotordynamic and Bearings, (FRI Nov 18)

GRADING: Group Assignments 40% Weekly (individual) quizzes 10% First Exam 15% Second Exam 15% Class Project 30% (proposal due by FRI Oct 14) 110% (*)

Notes: University justification required for missing Exams. All background material on prerequisites is responsibility of each student.
Project topic approved by instructor on F Oct 21, Project report & presentation on Monday December 5.
(*) Your grade can be > 100. Better than the perfect student. Go for it!

Reading material assigned is mandatory. In class discussions and quizzes on the assigned reading topics are regularly conducted.
### MEEN 626, Class Syllabus

L. San Andrés - Instructor

Reading assignments (technical papers) listed in Section 17 of your Class Notes (Syllabus – pages 7ff).  

<table>
<thead>
<tr>
<th>W (Dates)</th>
<th>Lecture Material (subject to revision)</th>
<th>Notes</th>
<th>Reading Assignment</th>
</tr>
</thead>
</table>
| 2 09/05 | **Classical Lubrication:** Laminar Flow Fluid Film Bearings. The Reynolds Equation. Magnitude of fluid inertia effects. Boundary conditions and the notion of liquid cavitation.  
**1-Dimensional bearings:** Evaluation of pressure field and forces for slider, Rayleigh-step bearings and simple dampers. | 2 2- App | Szeri, 1987, JoT, pp. 21-35. San Andrés, 1989, JoT, pp. 391-393 |
| 3 09/12-15 | Students attend to Turbomachinery/Pump Symposia, Houston | | Must register in advance |
| 4 09/19 | **1-Dimensional bearings:** Evaluation of pressure field and forces for ideal tilting pad bearings.  
| 5 09/26 | **Static load performance of plain journal bearings (JB):** Long and short JB models. Pressure and forces for short JBs. Equilibrium condition, attitude angle and Sommerfeld Number.  
| 7 10/24 | **Thermohydrodynamic analysis of finite length fluid film bearings including fluid inertia** (analytical perturbation methods and evaluation of dynamic force coefficients in finite length bearings. Finite Element models: basic equations and their solution.)  
**Turbulence in Fluid Film Bearings** Basic concepts. Hirs’ bulk-flow model for turbulent flows. Friction factors. Fluid inertia effects and importance in design.  
**Applications of oil seals in turbomachinery** Floating ring seals and long seals. **Gas seals:** Stiffness principle. Effect of eccentricity. Seals as load support elements. Rotordynamic effects  
| 11 11/18 | **EXAM II (F 11/18)** | 14 | Diaz & LSA, 1999, TribTrans |
### Method of Class Teaching:

- Description of material to be covered, provide reading assignments and homework, announce seminars or events of importance, deadlines, etc.
- Lecture material using 95% overheads. Stop each 15 minutes to provide (5 min.) discussion topics for students.
- At end of class, request students to fill One Minute Paper to establish their degree of understanding and address to questions or issues still unanswered.
- Provide closure to lecture and advance preview of upcoming material.

### MEEN 626 Lubrication Theory Policies

**Group homework** will be assigned. Homework is good practice for the exams, and more importantly to acquire practical experience solving actual industrial problems! One homework per group should be handed for grading. The grade is the same for all group members unless special circumstances arise. No late homework will be accepted. Note that homework assignments make 40% of your total grade.

The way to learn how to work problems is to work problems. Use the answer (if given or known) only to determine that your strategy, procedure, and numerical computations are correct. Working backwards from the answer will not teach you the engineering method, or the principles involved in the solution of the problem.

**Weekly advance reading assignments** are listed in the Class Syllabus (pages 2-3). Quizzes most times cover understanding of this material. The lectures broaden the coverage of the class notes and provide examples/insights of analysis. There are significant amounts of subject material mentioned in the lectures that are not in the class notes.

**Individual (pop) quizzes** (10 minutes) will be given (almost) weekly, graded and returned in class the following week. Quizzes account for 10% of your total grade (added bonus). Material for quizzes includes answering simple questions with physical relevance and/or detailing your level of comprehension about reading assignments.

**The class notes are not a complete reference for this course.** Attendance and attention to the lectures is therefore mandatory for success. There will be no excuses for missing quizzes or homework (except for University excused absences). Solutions to quizzes and homework problems will be often delivered electronically.

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c) questions related to the study material for an exam.
I reply promptly to all messages (usually within the next working hour if I am in town). If I cannot be found in my Campus Office, please call 862-4744. I spend most of my time at the Turbomachinery Laboratory (FM2818 and George Bush).

When will the instructor be absent? Schedule for make up classes
This Fall I have scheduled attending to several technical Conferences. There will be no class on the dates noted below. Make up recitations for the lost classes will be scheduled within a week and be conducted at nighttime (6 to 8 p.m.). The instructor will announce the exact date and meeting place.

<table>
<thead>
<tr>
<th>Date</th>
<th>Location/Event</th>
<th>Notes</th>
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<tbody>
<tr>
<td>September 22-25</td>
<td>Houston, Turbomachinery/Pump Symposium</td>
<td>Students are encouraged to attend the event.</td>
</tr>
<tr>
<td>October 14-18</td>
<td>Doha, Qatar, Middle Eastern Turbomachinery Symposium</td>
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</tbody>
</table>
Numerical Demonstrations
The instructor has developed a number of MATHCAD© worksheets and FORTRAN programs to help you gain understanding in the analysis of fluid film bearings and rotordynamics. Among these programs you will find the following:
- Calculation of dynamic force coefficients and threshold speed of instability of a rigid rotor supported on short journal bearings.
- Dynamic response of flexible rotor supported on short journal bearings. Demonstration of motion of system to impact and imbalance excitation.
- Dynamic response of rigid rotor supported on open ends squeeze film dampers. Demonstration of multiple valued response to imbalance.
- Calculation of dynamic force coefficients and threshold speed of instability for multiple pad bearings and pressure dam journal bearings.

Other computer programs available for prediction of steady state and rotordynamic force performance of the following types of bearings:
- **thrust:** incompressible fluid film tapered thrust bearings
- **spiral:** gas spiral grooved face seals and thrust bearings
- **femspesdambear:** incompressible fluid film radial pad bearings
- **hydrotrcM:** process fluid, laminar/turbulent flow hydrostatic bearings, annular seals and tilting pad bearings.

### MEEN 626 - Lubrication Theory - Class Project

Individual or group (4 students maximum) projects are acceptable. The purpose of the class project is to develop your ability to INDEPENDENTLY:
- select a well defined, though limited, TOPIC,
- clearly identifying the problem to be solved,
- locate and read related material,
- derive equations or preparing test apparatus,
- write related software or perform controlled tests,
- make computer runs and sum results in tables or graphs, or organizing test data,
- compare results to analytical predictions or published test data,
- write a well organized and neat technical report.

Do not expect your instructor to give you a topic, or derive or solve equations for you. This is your project! However, I will help you locate related material and give advice. Your project may be related to your professional expertise and/or current research interests, if applicable.

You must submit a ONE page proposal for the project by **October 14**. Do not initiate any work w/o consulting the class instructor or obtaining his approval by **October 21**. Most times proposals are poorly written, do not establish a clear need nor have objectives to accomplish. Students must realize that an objective is different from a task. Expected results or deliverables conclude a good proposal.

The project need not be typed but should have the following parts:
- Title page: name of student and abstract.
- Table of contents.
- Problem definition: establish objective.
- Review of pertinent past literature.
- Analysis with highlights in derivation of equations governing the model, or description of test rig and expected results,
- Discussion of numerical method of solution, or procedure to perform experiments,
- Results: discussion of calculations or measurements, comparison with analytical or existing results in the literature.
- Discussion on consistency, accuracy, and convergence of numerical or analytical approximation, or Discussion of uncertainty of test data,
- Conclusions and recommendations
- Bibliography.
- List of source file with sample input and output, or test data in tabular form.

E-mail a copy of your program, test results and technical report to LSanAndres@tamu.edu. Instructor will e-mail you later in the semester a document describing the preparation of sound technical reports.
The project should be completed, a technical report delivered on MONDAY December 5 and presented on December 5 (10 minute group oral presentation). Project grade (30% of total grade) will be based on originality, neatness, quality of results, level of difficulty, and correctness of approach and results. Suggested (suitable) topics for a group project are:

a) Develop a code for the analysis of externally pressurized gas bearings
b) Develop a code for the design of gas thrust pad bearings.
c) Develop a code for the analysis of finite length journal bearings with a mass conservation cavitation model.
d) Develop a code for the analysis of gas face-seals.
e) Perform imbalance response measurements on a rotor supported in a squeeze film damper.
f) Perform imbalance response measurements on a floating ring journal bearing rotor kit.
g) Perform imbalance response measurements on a rotor supported on flexure-pivot tilting pad bearings.
h) Perform imbalance response measurements on a rotor supported on gas film bearings.
i) Demonstrate experimentally streamlines (recirculation) in viscous fluid journal bearing.
j) Develop a code for imbalance response or transient response of a MDOF system with squeeze film dampers.
k) Analysis of dynamic response and stability characteristics of a flexible rotor supported in fluid film bearings.
l) Modify a rotor-bearing system and perform experiments to record (measure) oil-whirl and oil-whip.
m) Any other ideas or problems related to your research, professional experience or interests, with instructor’s prior approval.
n) REMEMBER: the objective of the project is for you to obtain depth in a particular aspect of lubrication theory. The project should NOT be purely numerical or purely experimental. A code will aid you to predict bearing/seal performance and to explain the findings. Tests will deliver bearing/seal performance and the results will serve to explain behavior.

A typical grading sheet for a MEEN 626 project follows:

<table>
<thead>
<tr>
<th>Student Names:</th>
<th>Project Title:</th>
<th>Abstract forwarded/approved:</th>
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</table>

<table>
<thead>
<tr>
<th>Computational or analytical subject</th>
<th>Experimental subject</th>
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</thead>
<tbody>
<tr>
<td><strong>CHECK</strong></td>
<td><strong>MARKS</strong></td>
</tr>
<tr>
<td>Title page: name of students and abstract</td>
<td>Idem</td>
</tr>
<tr>
<td>Table of contents</td>
<td>Idem</td>
</tr>
<tr>
<td>Problem definition: well established objective</td>
<td>Idem</td>
</tr>
<tr>
<td>Review of pertinent past literature</td>
<td>Idem</td>
</tr>
<tr>
<td>Analysis with highlights in derivation of equations governing the model</td>
<td>Description of test rig and expected results</td>
</tr>
<tr>
<td>Discussion of numerical method of solution</td>
<td>Procedure to perform experiments</td>
</tr>
<tr>
<td>Results: discussion of calculations (predictions), comparison with analytical or existing results in the literature</td>
<td>Results: discussion of measurements, comparison with analytical or existing results in the literature</td>
</tr>
<tr>
<td>Discussion on consistency, accuracy, and convergence of numerical solution</td>
<td>Discussion of uncertainty of test data</td>
</tr>
<tr>
<td>Conclusions and recommendations</td>
<td>Idem</td>
</tr>
<tr>
<td>What was learned? How to improve?</td>
<td></td>
</tr>
<tr>
<td>Bibliography (References)</td>
<td>Idem – USE ASME style format</td>
</tr>
<tr>
<td>List of source file with sample input and output (Electronic files)</td>
<td>Test data in tabular form (Electronic files)</td>
</tr>
<tr>
<td>Other evaluation criteria [ (-:poor, + : good, ++ : very good, +++: excellent) ]</td>
<td>At least 8+’s required for 90+ grade</td>
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<tr>
<td>Quality of oral presentation</td>
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<tr>
<td>Report neatness and organization</td>
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<tr>
<td>Level of difficulty</td>
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<tr>
<td>(Percent) Completion of stated objective(s)</td>
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</table>

Grading your class project is subjective and will depend greatly on the completion of the advanced objective and soundness of technical report (well written with accurate results). Uncertainty analysis required for experimental projects. Sensitivity analysis needed for computational projects. The larger the group, the more comprehensive the project and report should be.
Index to Class Notes Fall 2016

Lectures notes 0-16 and appendices available as pdf files at [http://rotorlabtamu.edu/me626/default.htm](http://rotorlabtamu.edu/me626/default.htm)

Reading Assignments, listed as item 17, available as pdf (limited access). MATHCAD codes also available

**Lecturer Reference** (contains an expanded summary of most material learned in course)

<table>
<thead>
<tr>
<th>Notes</th>
<th>Content</th>
</tr>
</thead>
</table>
| 0 | **Introduction to Hydrodynamic Lubrication**  
Appendix. Applications of Tribology in the 21st century  
Appendix. Microturbomachinery Applications |
| 1 | **The fundamental assumptions and equations of lubrication theory**  
The fundamental assumption in Lubrication Theory. Derivation of thin film flow equations from Navier-Stokes equations. Importance of fluid inertia effects in thin film flows. Some fluid physical properties |
| 2 | **Classical Lubrication Theory**  
Derivation of Reynolds equation for laminar flow bearings. Boundary conditions and types of liquid cavitation.  
| 3 | **Kinematics of motion in cylindrical journal bearings**  
MATHCAD program for display of pressure field in short length journal bearings. |
| 4 | **Static load performance of plain journal bearings**  
The long and short bearing models. Pressure field and fluid film forces on short length journal bearings. Equilibrium condition, load capacity and the Sommerfeld number. Simple lumped parameter thermal analysis  
MATHCAD program for calculation of equilibrium eccentricity in a short length journal bearing. |
| 5 | **Dynamics of a simple rotor-fluid film bearing system**  
Appendix Physical interpretation of dynamic forces for circular centered whirl  
MATHCAD program for evaluation of force coefficients in short length bearings  
MATHCAD program for prediction of threshold speed of instability and imbalance response of a rigid rotor supported on laminar flow short length journal bearings (no fluid inertia).  
MATHCAD program for prediction of transient response of rigid rotor supported on short length journal bearings or SFDS. |
| 6 | **Liquid cavitation in fluid film bearings**  
Appropriate boundary conditions for a sound cavitation model. The basics of a universal cavitation model (algorithm). Includes a discussion on air ingestion and entrainment and the differences with oil cavitation (gaseous or vapor).  
MATHCAD program for calculation of pressure fields in 1-D bearing (Mass conservation model and Reynolds condition). |
| 7 | **Thermal analysis of finite length fluid film bearings including fluid inertia** (analytical perturbation methods and evaluation of dynamic force coefficients in finite length bearings. Finite Element models: basic equations and their solution.)  
FORTAN program for prediction of static load and force coefficients in multiple pad bearings (distribution limited). |
| 8 | **Turbulence in Fluid Film Bearings**  
MATHCAD program for prediction of turbulent friction factors. |
| 9   | **Fluid inertia and turbulence in fluid film bearings**  
When fluid inertia effects are important. Bulk-flow model for inertial flows. Turbulence and inertia in short length journal bearings and open end dampers.  
MATHCAD program displays pressure fields (viscous + inertial) in superlaminar flow bearings and SFDs. MATHCAD predicts threshold speed of instability and imbalance response of a rigid rotor supported on turbulent flow short length journal bearings (no fluid inertia). |
| 10  | **A thermohydrodynamic bulk-flow model for fluid film bearings**  
| 11  | **Floating ring oil seals for compressors and Long (laminar flow) oil seals.**  
Applications in compressors and pumps: reduce leakage, seal gas products and the source of rotordynamic instability. MATHCAD program predicts force coefficients in turbulent flow short length journal bearings. |
| 12  | **(a) Annular pressure (damper) seals (22p)**  
MATHCAD program for prediction of leakage and force coefficients for short length annular seal.  
**(b) Hydrostatic journal bearings (18p)**  
Hydrostatic bearings in modern applications. The principle of hydrostatic lubrication. Effects of recess volume-fluid compressibility on force coefficients for operation at low and high frequencies. Applications of hydrostatic bearings. MATHCAD program predicts frequency dependent force coefficients in 1-D hydrostatic bearings. |
| 13  | **Squeeze Film Dampers (SFDs)**  
Appraisal of the art. Design considerations. Force Coefficients. Lubricant cavitation and air entrainment in SFDs.  
Response of a Rigid Rotor Supported on open-ended SFDs.  
(*) Digital video clips showing air entrainment in a SFD available at http://rotorlab.tamu.edu  
MATHCAD code: predicts imbalance response of rigid rotor supported on short length SFDs, fluid inertia effects included. |
| 14  | **Experimental identification of bearing force coefficients** includes paper on Instrumental Variable Filter method for bearing parameter identification.  
MATHCAD program implementing impedance and IVF methods for identification of parameters in a simple mechanical system. |
| 15  | **Gas film lubrication (59 p)**  
Introduction to gas bearings: slider and radial rigid bearings – limits of operation. A little about foil bearings  
**Gas Bearings for oil-free MTM**  
Appraisal of the art. Technical Presentation to IFToMM Rotordynamics Conference, Seoul, Korea (Sept, 2010) |
| 16  | **Analysis of tilting pad bearings**  
The fundamentals of analysis – Incomplete document. Presentation.  
**Appendix A primer to tilting pad bearings** (old but still useful material) |
Selected Technical papers (reading assignments)


**Other References with Useful Information** (paper copy only, ask your course instructor)


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### Recommended Tribology Journals

<table>
<thead>
<tr>
<th>Journal Name</th>
<th>Impact Factor</th>
<th>2015 or last 5 years</th>
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</thead>
<tbody>
<tr>
<td>Journal of Tribology</td>
<td>1.236</td>
<td>(Transactions of the ASME). Published quarterly by the American Society of Mechanical Engineers, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, USA.</td>
</tr>
<tr>
<td>Journal of Eng Gas Turbines Power</td>
<td>1.095</td>
<td>(Transactions of the ASME)</td>
</tr>
<tr>
<td>Tribology Transactions</td>
<td>1.418</td>
<td>(Journal of the Society of Tribologists and Lubrication Engineers). Published quarterly by STLE, 840 Busse Highway, Park Ridge, Illinois, USA</td>
</tr>
<tr>
<td>Wear</td>
<td>2.323</td>
<td>Published by Elsevier Science B.V. Sequoia SA, PO Box 851, 1001 Lausanne, Switzerland. ISSN 0043-1648</td>
</tr>
<tr>
<td>Tribology Letters</td>
<td>1.758</td>
<td></td>
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<tr>
<td>Tribology International</td>
<td>2.352</td>
<td>Published bimonthly by Butterworth Heinemann, Linacre House, Jordan Hill, Oxford, OX2 8DP.</td>
</tr>
<tr>
<td>Lubrication Engineering</td>
<td>0.53</td>
<td>(STLE magazine). Published monthly by STLE</td>
</tr>
</tbody>
</table>

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### Recommended reference books

- Moes, H., 2000, Lubrication and Beyond, U of Twente Press.
- Pinkus, O., 1990, Thermal Aspects of Fluid Film Tribology, ASME Press.
- Cameron, A., 1971, Basic Lubrication Theory, Longmans.

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### Recommended URL resources

- MIT Open Course [Tribology](http://www.rotordynamics.org/)  [Advanced Fluid Mechanics](http://www.rotordynamics.org/)
- Search for Conference papers – good stuff!
- Fluid film lubrication (the fundamentals) [Wikipedia](http://www.tribologytoday.com/)
Fluid film bearing manufacturers (nice pictures of cool products and applications)

- Lufkin-RMT Bearings
- Bearings+
- Kingsbury Bearings
- Waukesha Bearings
- Orion Bearings (John Crane)

NASA Oil-free turbomachinery Program

Air bearings: New Way Air Bearings

TRIBOLOGY SOFTWARE http://www.tribology-abc.com/calculators/window.htm

Disclaimer: Your lecturer does NOT endorse any of the commercial sites listed above. These are merely resources for students to see actual bearings and seals.
Course title and number  MEEN 626: Lubrication Theory  
Term (e.g., Fall 200X)  Fall 2018  
Meeting times and location  Tuesday/Thursday 8:00-9:15 a.m.; ENPH 204  
Recorded lectures for Distance students will be uploaded within 24 hours of the face-to-face course time.

Course Description and Prerequisites

Development of Reynolds Equation from Navier Stokes equations for study of hydrodynamic lubrication theory as the basis for bearing design; applications to simple thrust and journal bearings and pads of various geometries; hydrostatic lubrication, floating ring bearings, compressible fluid (gas) lubrication, grease lubrication, dynamically loaded bearings, half speed whirl and stability.  

Prerequisites: MATH 308, MEEN 345 or equivalent.

Learning Outcomes or Course Objectives

To introduce the fundamental physical principles of the classical theory of hydrodynamic lubrication, to learn about the applications of bearings and seals in oil & gas rotating machinery, and to introduce process fluid film bearings for high speed applications. The class material emphasizes the understanding of physical principles and the effects of fluid film bearings on the dynamics of rotating machinery.

Distance Learning Statement: This course is taught face-to-face and through distance learning. The learning objectives and course requirements for the face-to-face and distance learning sections are the same. Contact hours are consistent between both teaching modalities.

Instructor Information

Name  Dr. Luis San Andrés  
Telephone number  979-862-4744  
Email address  lsanandres@tamu.edu  
Office hours  9:15-10 a.m. or by appointment  
Office location  MEOB 117

Textbook and/or Resource Material

Text Book: San Andrés, L. Modern Lubrication Theory, Class Notes (~450 pages) available at URL site http://rotorlab.tamu.edu/me626/default.htm

References: Childs, D., Turbomachinery Rotordynamics with Case Studies, Minter Spring Publisher, 2013.  

• Selected journal papers (mandatory reading) listed in Index of Notes (pages 7-ff Syllabus).

TRIBOLOGY SOFTWARE http://www.tribology-abc.com/calculators/window.htm

Grading Policies
Course Outline: Two 75’ lectures/week. Group homework assigned & graded. Two (in class) exams and a group selected project.

EXAMS: 1: Design of simple thrust and journal bearings, (Thursday Oct 11)
2: Rotordynamic and Bearings, (Thursday Nov 29)

GRADING: Group Assignments 30%
First Exam 20%
Second Exam 20%
Group Project 30% (proposal due by Thursday Oct 18)
100% (*)

Notes: University justification required for missing Exams. All background material on prerequisites is responsibility of each student.
Project topic approved by instructor on R Oct 25, Project report & presentation on Tuesday December 4.
(*) Your grade can be > 100. Better than the perfect student. Go for it!

Reading material assigned is mandatory. In class discussions and quizzes on the assigned reading topics are regularly conducted.

Grading Scale

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90.00 - 100%</td>
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<tr>
<td>B</td>
<td>80.00 - 89.99%</td>
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<tr>
<td>C</td>
<td>70.00 - 79.99%</td>
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<tr>
<td>D</td>
<td>60.00 – 69.99%</td>
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<tr>
<td>F</td>
<td>Less than 60%</td>
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</tbody>
</table>

Course Topics, Calendar of Activities, Major Assignment Dates

Reading assignments (technical papers) listed in Section 17 of your Class Notes (Syllabus – pages 7-ff).


<table>
<thead>
<tr>
<th>W</th>
<th>(Dates)</th>
<th>Lecture Material (subject to revision)</th>
<th>Notes</th>
<th>Reading Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>09/13</td>
<td>1-Dimensional bearings: Evaluation of pressure field and forces for ideal tilting pad bearings. Kinematics of motion in cylindrical journal bearings Reynolds equation</td>
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<td>Date</td>
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<td>4</td>
<td>09/18 Students attend to Turbomachinery/Pump Symposia, Houston</td>
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<td>Must register in advance</td>
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<td>09/21</td>
<td>Static load performance of plain journal bearings (JB): Long and short</td>
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<td>JB models. Pressure and forces for short JBs. Equilibrium condition,</td>
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<td>attitude angle and Sommerfeld Number.</td>
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<td>5</td>
<td>24-27 Instructor away to Brazil – IFTomm Conference</td>
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<td>09/28</td>
<td>Make up class – continue from 09/21</td>
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<td>6</td>
<td>10/02 - 10/04 Dynamics of rigid rotor-fluid film bearing system</td>
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<td>Eqns. of motion. The concept of force coefficients. Stability</td>
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<td>and synchronous response. Effect of cross-coupled stiffness.</td>
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<td>Other Bearing geometries</td>
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<tr>
<td></td>
<td>Childs, Chp 3, pp. 132-183</td>
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<td>7</td>
<td>10/09 Liquid Cavitation in fluid film bearings: Physical concepts and</td>
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<td>a universal calculation model. Air entrainment in dynamically loaded</td>
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<td>bearings.</td>
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<td>10/11</td>
<td>EXAM I (Thursday)</td>
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<td>8</td>
<td>10/16 - 10/18 Thermohydrodynamic analysis of finite length fluid film</td>
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<td>bearings including fluid inertia (analytical perturbation methods and</td>
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<td>evaluation of dynamic force coefficients in finite length bearings.</td>
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<td>Finite Element models: basic equations and their solution.)</td>
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<td>Group PROJECT proposal due on 10/18</td>
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<td>San Andrés, 2012, IMECE2012-87713</td>
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<td>9</td>
<td>10/23 - 10/25 Turbulence in Fluid Film Bearings</td>
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<td>Basic concepts. Hirs’ bulk-flow model for turbulent flows. Friction</td>
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<td>factors. Fluid inertia effects and importance in design.</td>
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<td>10</td>
<td>10/30 Fluid inertia and turbulence in fluid film bearings:</td>
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<td>When fluid inertia effects are important. Bulk-flow model for</td>
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<td>11</td>
<td>11/01 Thermohydrodynamic Bulk-Flow Models: The bulk-flow model (BFM)</td>
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<td>for turbulent flow bearings &amp; seals. Importance of thermal effects in</td>
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<td>process fluid applications. A CFD method for solution of the BFM eqns.</td>
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<td>Launder, 1977, JLT, pp. 330-338</td>
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<td>11</td>
<td>11/06 - 11/08 Applications of oil seals in turbomachinery Floating</td>
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<td>ring seals and long seals. Gas seals: Stiffness principle. Effect of</td>
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<td>eccentricity. Seals as load support elements. Rotordynamic effects.</td>
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<tr>
<td>12</td>
<td>11/13 Annular pressure (damper) seals and hydrostatic bearings Stiffness</td>
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<td>principle. Effect of eccentricity. Seals as</td>
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<td>Chupp et al., 2006, AIAA JPP Chuds, Chp 4, pp. 227-284</td>
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</tbody>
</table>
**Method of Class Teaching:**

- Description of material to be covered, provide reading assignments and homework, announce seminars or events of importance, deadlines, etc.
- Lecture material using 95% overheads. Stop each 15 minutes to provide (5 min.) discussion topics for students.
- At end of class, request students to fill One Minute Paper to establish their degree of understanding and address to questions or issues still unanswered.
- Provide closure to lecture and advance preview of upcoming material.

**MEEN 626 Lubrication Theory – POLICIES**

**Group homework** will be assigned. Homework is good practice for the exams, and more importantly to acquire practical experience solving actual industrial problems! One homework per group should be handed for grading. The grade is the same for all group members unless special circumstances arise. No late homework will be accepted. Note that homework assignments make 30% of your total grade.

The way to learn how to work problems is to work problems. Use the answer (if given or known) only to determine that your strategy, procedure, and numerical computations are correct. Working backwards from the answer will not teach you the engineering method, or the principles involved in the solution of the problem.

**Weekly advance reading assignments** are listed in the Class Syllabus (pages 2-3). Quizzes most times cover understanding of this material. The lectures broaden the coverage of the class notes and provide examples/insights of analysis. There are significant amounts of subject material mentioned in the lectures that are not in the class notes.

**The class notes are not a complete reference for this course.** Attendance and attention to the lectures is therefore mandatory for success. There will be no excuses for missing quizzes or homework (except for University excused absences). Solutions to quizzes and homework problems will be often
delivered electronically.

**About Lecture notes and MATHCAD® programs:** The lectures, handouts and MATHCAD® worksheets used in this course are copyrighted. By “handouts,” I mean all materials generated for this class, which include but are not limited to syllabi, lecture notes, computer programs, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy or modify the handouts, unless I expressly grant permission.

**About plagiarism:** As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the TAMU Student Rules, section “Scholastic Dishonesty.”

**About Office Hours:**
The purpose of office hours is to encourage individual interaction between the student and the instructor. The instructor is available to discuss not only questions related to the course, but other issues where I can help you as a professional engineer and educator. Please take advantage of office hours. To utilize this time efficiently, students should prepare by organizing questions in advance. Students should seek help in developing clear procedures for solution of problems and to improve their understanding of class materials. I will not solve problems for you. Instead, I will help you learn an engineering method for problem solving.

I am willing to help you at times other than office hours without an appointment; however, just like you, I have responsibilities other than MEEN 626 and must budget certain times to meet those responsibilities. So please do not be offended if I am in the office but cannot meet with you.

The use of e-mails for communication with your instructor is acceptable. I usually receive three types of messages:

a) a request to schedule a meeting at other times than office hours,
b) questions related to the impending homework or reading assignment,
c) questions related to the study material for an exam.

I reply promptly to all messages (usually within the next working hour if I am in town). If I cannot be found in my Campus Office, please call 862-4744. I spend most of my time at the Turbomachinery Laboratory (FM2818 and George Bush).

**When will the instructor be absent? Schedule for make up classes**
This Fall I have scheduled attending to several technical Conferences. There will be no class on the dates noted below. Make up recitations for the lost classes will be scheduled within a week and be conducted at nighttime (6 to 8 p.m.). The instructor will announce the exact date and meeting place.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>September 17-20</td>
<td>Houston, Turbomachinery/Pump Symposium Students are encouraged to attend the event.</td>
</tr>
<tr>
<td>September 23-27</td>
<td>Rio de Janeiro, Brazil, otordynamics IFToMM Conference</td>
</tr>
<tr>
<td>November 14-16</td>
<td>Seoul, 2018 Korea Rotating Machinery Symposium (KRMS)</td>
</tr>
<tr>
<td>November 23-29</td>
<td>China, BUCT</td>
</tr>
</tbody>
</table>

**Numerical Demonstrations**
The instructor has developed a number of MATHCAD® worksheets and FORTRAN programs to help you gain understanding in the analysis of fluid film bearings and rotordynamics. Among these programs you will find the following:

- Calculation of dynamic force coefficients and threshold speed of instability of a rigid rotor supported on short journal bearings.
- Dynamic response of flexible rotor supported on short journal bearings. Demonstration of motion of system to impact and imbalance excitation.
- Dynamic response of rigid rotor supported on open ends squeeze film dampers. Demonstration of multiple valued response to imbalance.
Calculation of dynamic force coefficients and threshold speed of instability for multiple pad bearings and pressure dam journal bearings.

Other computer programs available for prediction of steady state and rotordynamic force performance of the following types of bearings:

- **thrust**: incompressible fluid film tapered thrust bearings
- **spiral**: gas spiral grooved face seals and thrust bearings
- **fempresdambear**: incompressible fluid film radial pad bearings
- **hydrotcM**: process fluid, laminar/turbulent flow hydrostatic bearings, annular seals and tilting pad bearings.

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

Academic Integrity

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

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

It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty (Student Rule 20. Scholastic Dishonesty, [http://student-rules.tamu.edu](http://student-rules.tamu.edu)). New procedures and policies have been adopted effective September 1, 2004. Details are available through the Office of the Aggie Honor System ([http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)). An excerpt from the Philosophy & Rationale section states: "Apathy or acquiescence in the presence of academic dishonesty is not a neutral act — failure to confront and deter it will reinforce, perpetuate, and enlarge the scope of such misconduct. Academic dishonesty is the most corrosive force in the academic life of a university."

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**MEEN 626 - LUBRICATION THEORY - CLASS PROJECT**

Individual or group (4 students maximum) projects are acceptable. The purpose of the class project is to develop your ability to INDEPENDENTLY:

- select a well defined, though limited, TOPIC,
- clearly identifying the problem to be solved,
- locate and read related material,
- derive equations or preparing test apparatus,
- write related software or perform controlled tests,
- make computer runs and sum results in tables or graphs, or organizing test data,
- compare results to analytical predictions or published test data,
- write a well organized and neat technical report.

Do not expect your instructor to give you a topic, or derive or solve equations for you. This is your project! However, I will help you locate related material and give advice. Your project may be related to your professional expertise and/or current research interests, if applicable.

You must submit a ONE page proposal for the project by **October 18**. Do not initiate any work w/o consulting the class instructor or obtaining his approval by **October 25**. Most times proposals are poorly written, do not establish a clear need nor have objectives to accomplish. Students must realize that an objective is different from a task. Expected results or deliverables conclude a good proposal.

The project need not be typed but should have the following parts:

- Title page: name of student and abstract.
Table of contents.
Problem definition: establish objective.
Review of pertinent past literature.
Analysis with highlights in derivation of equations governing the model, or description of test rig and expected results.
Discussion of numerical method of solution, or procedure to perform experiments.
Results: discussion of calculations or measurements, comparison with analytical or existing results in the literature.
Discussion on consistency, accuracy, and convergence of numerical or analytical approximation, or Discussion of uncertainty of test data.
Conclusions and recommendations
Bibliography.
List of source file with sample input and output, or test data in tabular form.

E-mail a copy of your program, test results and technical report to LSanAndres@tamu.edu. Instructor will e-mail you later in the semester a document describing the preparation of sound technical reports.

The project should be completed, a technical report delivered on TUESDAY December 4 and presented on December 45 (10 minute group oral presentation). Project grade (30% of total grade) will be based on originality, neatness, quality of results, level of difficulty, and correctness of approach and results.

**Suggested (suitable) topics for a group project are:**

a) Develop a code for the analysis of externally pressurized gas bearings
b) Develop a code for the design of gas thrust pad bearings.
c) Develop a code for the analysis of finite length journal bearings with a mass conservation cavitation model.
d) Develop a code for the analysis of gas face-seals.
e) Perform imbalance response measurements on a rotor supported in a squeeze film damper.
f) Perform imbalance response measurements on a floating ring journal bearing rotor kit.
g) Perform imbalance response measurements on a rotor supported on flexure-pivot tilting pad bearings.
h) Perform imbalance response measurements on a rotor supported on gas film bearings.
i) Demonstrate experimentally streamlines (recirculation) in viscous fluid journal bearing.
j) Develop a code for imbalance response or transient response of a MDOF system with squeeze film dampers.
k) Analysis of dynamic response and stability characteristics of a flexible rotor supported in fluid film bearings.
l) Modify a rotor-bearing system and perform experiments to record (measure) oil-whirl and oil-whip.
m) Any other ideas or problems related to your research, professional experience or interests, with instructor’s prior approval.

**REMEMBER:** the objective of the project is for you to obtain depth in a particular aspect of lubrication theory. The project should NOT be purely numerical or purely experimental. A code will aid you to predict bearing/seal performance and to explain the findings. Tests will deliver bearing/seal performance and the results will serve to explain behavior.

**A typical grading sheet for a MEEN 626 project follows:**

<table>
<thead>
<tr>
<th>Student Names:</th>
<th>Project Title:</th>
<th>Abstract forwarded/approved:</th>
<th>GRADE:</th>
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<table>
<thead>
<tr>
<th><strong>Computational or analytical subject</strong></th>
<th><strong>Experimental subject</strong></th>
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<tbody>
<tr>
<td>Title page: name of students and abstract</td>
<td>Idem</td>
</tr>
<tr>
<td>Table of contents</td>
<td>Idem</td>
</tr>
<tr>
<td>Problem definition: well established objective</td>
<td>Idem</td>
</tr>
<tr>
<td>Review of pertinent past literature</td>
<td>Idem</td>
</tr>
<tr>
<td>Analysis with highlights in derivation of equations governing the model</td>
<td>Description of test rig and expected results</td>
</tr>
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<td>Section</td>
<td>Description</td>
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<tr>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>Discussion of numerical method of solution</td>
<td>Procedure to perform experiments</td>
</tr>
<tr>
<td>Results: discussion of calculations (predictions), comparison with analytical or existing results in the literature</td>
<td>Results: discussion of measurements, comparison with analytical or existing results in the literature</td>
</tr>
<tr>
<td>Discussion on consistency, accuracy, and convergence of numerical solution</td>
<td>Discussion of uncertainty of test data</td>
</tr>
<tr>
<td>Conclusions and recommendations What was learned? How to improve?</td>
<td>Idem</td>
</tr>
<tr>
<td>Bibliography (References)</td>
<td>Idem – USE ASME style format</td>
</tr>
<tr>
<td>List of source file with sample input and output (Electronic files)</td>
<td>Test data in tabular form (Electronic files)</td>
</tr>
<tr>
<td>Other evaluation criteria (:- poor, + : good, ++ : very good, +++: excellent)</td>
<td>At least 8+’s required for 90 + grade</td>
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<tr>
<td>Quality of oral presentation</td>
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<tr>
<td>Report neatness and organization</td>
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<tr>
<td>Level of difficulty</td>
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<tr>
<td>(Percent) Completion of stated objective(s)</td>
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</tbody>
</table>

Grading your class project is subjective and will depend greatly on the completion of the advanced objective and soundness of technical report (well written with accurate results). Uncertainty analysis required for experimental projects. Sensitivity analysis needed for computational projects. **The larger the group, the more comprehensive the project and report should be.**
### MEEN 626 - LUBRICATION THEORY  
Fall 2018

**Index to Class Notes Fall 2018**

Lectures notes 0-16 and appendices available as pdf files at [http://rotorlabtamu.edu/me626/default.htm](http://rotorlabtamu.edu/me626/default.htm)

Reading Assignments, listed as item 17, available as pdf (limited access). MATHCAD codes also available

**Lecturer Reference** (contains an expanded summary of most material learned in course)


<table>
<thead>
<tr>
<th>Notes</th>
<th>Content</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>The fundamental assumptions and equations of lubrication theory</strong>  &lt;br&gt;The fundamental assumption in Lubrication Theory. Derivation of thin film flow equations from Navier-Stokes equations. Importance of fluid inertia effects in thin film flows. Some fluid physical properties</td>
</tr>
<tr>
<td>2</td>
<td><strong>Classical Lubrication Theory</strong>  &lt;br&gt;Derivation of Reynolds equation for laminar flow bearings. Boundary conditions and types of liquid cavitation.  &lt;br&gt;<em>Appendix: One dimensional slider bearing, Rayleigh (step) bearing and circular plate squeeze film damper. A historical ASME landmark: The Kingsbury bearing.</em></td>
</tr>
<tr>
<td>3</td>
<td><strong>Kinematics of motion in cylindrical journal bearings</strong>  &lt;br&gt;Reynolds equation for cylindrical journal bearings. Kinematics of motion and film thickness. Distinction between fixed and rotating coordinates. The pure squeeze velocity vector. Examples of journal motion.  &lt;br&gt;MATHCAD program for display of pressure field in short length journal bearings.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Static load performance of plain journal bearings</strong>  &lt;br&gt;The long and short bearing models. Pressure field and fluid film forces on short length journal bearings. Equilibrium condition, load capacity and the Sommerfeld number. Simple lumped parameter thermal analysis  &lt;br&gt;MATHCAD program for calculation of equilibrium eccentricity in a short length journal bearing.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Dynamics of a simple rotor-fluid film bearing system</strong>  &lt;br&gt;Equations of motion of a rigid rotor. The concept of force coefficients. Derivation of stiffness and damping coefficients for the short bearing. Stability analysis and the effect of cross-coupled stiffness. Effect of rotor flexibility on stability and imbalance response. Includes a section on practical (used) bearing configurations and recommendations.  &lt;br&gt;<em>Appendix Physical interpretation of dynamic forces for circular centered whirl</em>  &lt;br&gt;MATHCAD program for evaluation of force coefficients in short length bearings  &lt;br&gt;MATHCAD program for prediction of threshold speed of instability and imbalance response of a rigid rotor supported on laminar flow short length journal bearings (no fluid inertia).  &lt;br&gt;MATHCAD program for prediction of transient response of rigid rotor supported on short length journal bearings or SFDS.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Liquid cavitation in fluid film bearings</strong>  &lt;br&gt;Appropriate boundary conditions for a sound cavitation model. The basics of a universal cavitation model (algorithm). Includes a discussion on air ingestion and entrapment and the differences with oil cavitation (gaseous or vapor).  &lt;br&gt;MATHCAD program for calculation of pressure fields in 1-D bearing (Mass conservation model and Reynolds condition).</td>
</tr>
<tr>
<td>7</td>
<td><strong>Thermal analysis of finite length fluid film bearings including fluid inertia</strong> (analytical perturbation methods and evaluation of dynamic force coefficients in finite length bearings. Finite Element models: basic equations and their solution.)</td>
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<tr>
<td>9</td>
<td><strong>Fluid inertia and turbulence in fluid film bearings</strong></td>
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<td>11</td>
<td><strong>Floating ring oil seals for compressors and Long (laminar flow) oil seals</strong></td>
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<tr>
<td>12</td>
<td><strong>Annular pressure (damper) seals (22p)</strong></td>
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<td><strong>Hydrostatic journal bearings (18p)</strong></td>
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<tr>
<td>13</td>
<td><strong>Squeeze Film Dampers (SFDs)</strong></td>
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<td>14</td>
<td><strong>Experimental identification of bearing force coefficients</strong></td>
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<td>16</td>
<td><strong>Analysis of tilting pad bearings</strong></td>
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<td>Author(s)</td>
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18 Other References with Useful Information (paper copy only, ask your course instructor)


Recommended Tribology Journals

<table>
<thead>
<tr>
<th>Journal of Tribology</th>
<th>Impact factor</th>
<th>2015 or last 5 years</th>
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<tr>
<td>1.236</td>
<td>(Transactions of the ASME). Published quarterly by the American Society of Mechanical Engineers, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, USA.</td>
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<th>Journal of Eng Gas Turbines Power</th>
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<tr>
<td>1.418</td>
<td>(Journal of the Society of Tribologists and Lubrication Engineers). Published quarterly by STLE, 840 Busse Highway, Park Ridge, Illinois, USA</td>
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<tr>
<td>2.323</td>
<td>Published by Elsevier Science B.V. Sequoia SA, PO Box 851, 1001 Lausanne, Switzerland. ISSN 0043-1648</td>
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<td>2.352</td>
<td>Published bimonthly by Butterworth Heinemann, Linacre House, Jordan Hill, Oxford, OX2 8DP.</td>
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<td>0.631</td>
<td>(Proceedings of the Institution of Mechanical Engineers, Part J). Published quarterly by Mechanical Engineering Publications Ltd.</td>
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<td>0.53</td>
<td>(STLE magazine). Published monthly by STLE</td>
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</table>

Recommended reference books


Moes, H., 2000, Lubrication and Beyond, U of Twente Press.

Pinkus, O., 1990, Thermal Aspects of Fluid Film Tribology, ASME Press.


Cameron, A., 1971, Basic Lubrication Theory, Longmans.

Recommended URL resources
MIT Open Course Tribology  Advanced Fluid Mechanics
http://www.rotordynamics.org/  Search for Conference papers – good stuff!

Fluid film lubrication (the fundamentals) Wikipedia

Fluid film bearing manufacturers (nice pictures of cool products and applications)
Lufkin-RMT Bearings  Bearings+
Kingsbury Bearings  Waukesha Bearings  Orion Bearings (John Crane)

NASA Oil-free turbomachinery Program

Air bearings: New Way Air Bearings
http://www.rrdynamics.com/

TRIBOLOGY SOFTWARE http://www.tribology-abc.com/calculators/window.htm

Disclaimer: Your lecturer does NOT endorse any of the commercial sites listed above. These are merely resources for students to see actual bearings and seals.
Course Change Request

Date Submitted: 07/24/18 1:24 pm

Viewing: MEEN 651 : Control System Design

Last edit: 07/26/18 10:48 am

Changes proposed by: schmiae

Catalog Pages referencing this course

- Department of Mechanical Engineering
- MEEN - Mechanical Engineering

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
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<tbody>
<tr>
<td>Ashley Schmitt</td>
<td><a href="mailto:schmiae@tamu.edu">schmiae@tamu.edu</a></td>
<td>979-458-9814</td>
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Rationale for Course Edit

The proposed changes are for accreditation purposes.

Course prefix  MEEN  Course number  651
Department     Mechanical Engineering
College/School College of Engineering
Academic Level Graduate
Academic Level (alternate) Undergraduate
Effective term  2018-2019

Complete Course Title  Control System Design
Abbreviated Course Title  CONTROL SYSTEM DESIGN

Catalog course description

Frequency domain design of SISO systems for performance and sensitivity reduction; applications of Kalman filter and LQG/LTR techniques; design of sample-data systems; active control of vibration in distributed parameter systems; describing function and relay controls; application of control principles to engineering design.

Prerequisites and Restrictions

MEEN 411.

Concurrent Enrollment  No

Should catalog prerequisites / concurrent enrollment be enforced?  No

Crosslistings  No  Crosslisted With

Stacked  No  Stacked with

In Workflow

1. MEEN Department Head
2. Curricular Services Review
3. EN Committee Preparer GR
4. EN Committee Chair GR
5. EN College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 07/25/18 4:20 pm  Ying Li (yingli): Approved for MEEN Department Head
2. 07/26/18 10:48 am  Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 08/02/18 4:37 pm  Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 08/08/18 11:26 am  Harry Hogan (h-hogan): Approved for EN College Dean GR
5. 08/08/18 11:27 am  Harry Hogan (h-hogan): Approved for EN Committee Chair GR
6. 08/08/18 5:06 pm  LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 08/08/18 5:12 pm  LaRhesa Johnson (lrjohnson): Approved for GC Chair
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<td>Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)</td>
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Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Non-traditional offerings have been assessed by the department and found to be consistent with traditional offering in learning outcomes.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Non-traditional offerings have been assessed by the department and found to be consistent with traditional offering in contact hours.

Will this course be taught as a distance education course?

Yes No

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.

Yes No

Is 100% of this course going to be taught in Texas?

Yes

Will classroom space be needed for this course?

Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

---

**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus [MEEN 651 Syllabus - Fall 2018.pdf](MEEN 651 Syllabus - Fall 2018.pdf)

Syllabus651-prp-fall2017.docx
<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information</td>
<td>This edit is to convey certification that the non-traditional offerings of the course is consistent with the traditional offering in learning outcomes and contact hours per SACSCOC requirements for Fall 2018. Would like the Effective Term be 2018-2019 but CARS is not allowing this term.</td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td></td>
</tr>
<tr>
<td>Reported to state?</td>
<td>No</td>
</tr>
</tbody>
</table>
Course title and number: MEEN 651: Control System Design

Term: Fall 2018

Meeting times and location: TR 12:45-2:00 p.m.; ENPH 205

Recorded lectures for Distance students will be uploaded within 24 hours of the face-to-face course time.

Course Description and Prerequisites

Frequency domain design of SISO systems for performance and sensitivity reduction; applications of Kalman filter and LQG/LTR techniques; design of sample-data systems; active control of vibration in distributed parameter systems; describing function and relay controls; application of control principles to engineering design.

Prerequisite: MEEN 411 or equivalent

Learning Outcomes or Course Objectives

After completing this course, the students should be able to model and analyze continuous and discrete-time linear systems; evaluate the effects of sampling in linear control systems; evaluate stability of continuous and discrete-time linear control systems; understand the structural properties of controllability, observability; express state-space representations in canonical forms; design state-feedback controllers based on pole placement; design linear observers.

Distance Learning Statement: This course is taught face-to-face and through distance learning. The learning objectives and course requirements for the face-to-face and distance learning sections are the same. Contact hours are consistent between both teaching modalities.

Instructor Information

Name: Prabhakar R. Pagilla
Telephone number: 979-458-4829
Email address: ppagilla@tamu.edu
Office hours: Tuesday 10:30 a.m. – 12:00 p.m.; Thursday 1:00-2:30 p.m.
Office location: MEOB 529
Textbook and/or Resource Material

Suggested Textbook:


Other References:


Grading Policies

Method of Evaluation:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
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</tr>
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<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Final exam</td>
<td>40%</td>
</tr>
</tbody>
</table>

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- Homework or exam work that cannot be followed or illegible, while possibly correct, will be considered incorrect and not subject to appeal for a grade change.

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60</td>
</tr>
<tr>
<td>Week</td>
<td>Topic</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Introduction; continuous and discrete time control systems; linear and non-linear systems; Laplace and z transforms</td>
</tr>
<tr>
<td>2</td>
<td>Mathematical modeling of dynamic systems; linearization; transfer functions; state space form; transformation of state variables</td>
</tr>
<tr>
<td>3</td>
<td>Solution of linear differential equations in state space form; state transition matrix</td>
</tr>
<tr>
<td>4</td>
<td>Sampling; effects of sampling; aliasing; Shannon sampling theorem; zero-order and first-order holds; pulse transfer function; finite-impulse and infinite-impulse response filters</td>
</tr>
<tr>
<td>5</td>
<td>Fourier Transform (FT); Discrete Fourier Transform (DFT); Fast Fourier Transform (FFT)</td>
</tr>
<tr>
<td>6</td>
<td>Stability; Routh-Hurwitz algorithm; Jury stability test</td>
</tr>
<tr>
<td>7</td>
<td>Graphical methods: root locus, Nyquist Diagrams, Bode plots</td>
</tr>
<tr>
<td>8</td>
<td>Robustness and stability (Gain and Phase margins)</td>
</tr>
<tr>
<td>9</td>
<td>Design of PID and lead/lag controllers</td>
</tr>
<tr>
<td>10</td>
<td>Lyapunov stability</td>
</tr>
<tr>
<td>11</td>
<td>Definitions and conditions for Controllability, Observability, Stabilizability, and Detectability; canonical forms; Kalman decomposition</td>
</tr>
<tr>
<td>12</td>
<td>Control system design using pole placement</td>
</tr>
<tr>
<td>13</td>
<td>Structure, properties and design of observers, reduced order observers</td>
</tr>
<tr>
<td>14</td>
<td>Separation principle; observer-based controller design</td>
</tr>
<tr>
<td>15</td>
<td>Linear quadratic optimal control</td>
</tr>
</tbody>
</table>

**Exams:**
- Exam 1: 5:30 p.m. – 6:45 p.m., Thursday, October 4, 2018
- Exam 2: 5:30 p.m. – 6:45 p.m., Thursday, November 8, 2018
- Final Exam: 8:00-10:00 a.m., Wednesday, December 12, 2018

- Exams 1 and 2 will be held during class lecture periods and will include course material covered up to those exam dates.
- The final exam is comprehensive.
- All exams will be open book and open notes.
- Additional instructions will be given on the exam sheet.
Other Pertinent Course Information

Attendance Policy:
- Lecture attendance is considered voluntary, but strongly encouraged.
- Any work missed due to absences will only be excused for approved activities in accordance with Texas A&M University Student Rules (see http://student-rules.tamu.edu/rule07/). Proper documentation must be submitted for the absence within one week following an excused absence. In accordance with recent changes to Texas A&M University Student Rule 7, be aware that in this class a confirmation note from your medical provider is required for any “injury or illness that is too severe or contagious for the student to attend class”, even if the absence is for less than 3 days (see 7.1.6.2 Injury or illness less than three days.).

Class discipline:
- Please do not look at your cell phones, read newspapers, sleep during the class, or disturb the class in any other way.
- Please do not talk with fellow students during the lecture.
- Please mute all cell phones and other devices prior to the lecture.

Communication:
- Email will be the primary means of communication. Please check your email daily to receive any updates on homework assignments, lectures, etc.
- Course material will be posted on the course webpage on eCampus (http://ecampus.tamu.edu/).
- It is the responsibility of the student to check that the grades on ecampus match their homework/exam grades. If there is a mismatch, the student should inform the instructor within one week from the date grades have been posted.

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. 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.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: www.tamu.edu/aggiehonor/.

On all course work, assignments, and examinations at Texas A&M University, a cover sheet containing the following Honor Pledge shall be preprinted and signed by the student:

“On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work.”

Campus Emergency
Emergency preparedness is a necessary aspect of student life. Texas A&M University has implemented a campus notification system in case of an emergency utilizing text messaging through a program called CODE MAROON. This program and other campus emergency information are available for study at http://www.tamu.edu/emergency/.
Mechanical Engineering 651- Control System Design

Fall 2017
Tuesday/Thursday 5:30 p.m. - 6:45 p.m., ENPH 205

Instructor: Prabhakar R. Pagilla
Office: MEOB 529
Email: ppagilla@tamu.edu
Office Hours: Tuesday: 10:30 p.m.–12:00 p.m.; Thursday: 1:00-2:30 p.m.

Teaching Assistant: Yalun Wen
Office: ENPH 408
Email: ywen27@tamu.edu
Office Hours: Wednesday: 2:00-3:00 p.m.; Friday: 9:00-10:00 a.m.

Prerequisite: MEEN 411 or equivalent

Suggested Textbook:


Other References:


Course Syllabus:

1. Introduction; continuous and discrete-time control systems; linear and nonlinear systems; Laplace and z transforms
2. Mathematical modeling of dynamic systems; linearization; transfer functions; state space form; transformation of state variables;
3. Solution of linear differential equations in state space form; state transition matrix
4. Sampling; effects of sampling; aliasing; Shannon sampling theorem; zero-order and first-order holds; pulse transfer function; finite-impulse and infinite-impulse response filters
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Exams:
- Exam 1: 5:30 p.m. – 6:45 p.m., Thursday, October 5, 2016
- Exam 2: 5:30 p.m. – 6:45 p.m., Thursday, November 9, 2017
- Final Exam: 3:30 – 5:30 p.m., Wednesday, December 13, 2016

- Exams 1 and 2 will be held during class lecture periods and will include course material covered up to those exam dates.
- The final exam is comprehensive.
- All exams will be open book and open notes.
- Additional instructions will be given on the exam sheet.

Method of Evaluation:

<table>
<thead>
<tr>
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  A: 90-100; B: 80-90; C: 70-80; D: 60-70; F: below 60

Quizzes: Short unannounced quizzes will be given during some of the lectures to ascertain student progress and understanding.

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Course Change Request

Date Submitted: 05/07/18 3:50 pm

Last edit: 05/07/18 3:50 pm
Changes proposed by: k-mora

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krisi Mora</td>
<td><a href="mailto:k-mora@tamu.edu">k-mora@tamu.edu</a></td>
<td>9798456127</td>
</tr>
</tbody>
</table>

Rationale for Course

Edit

Other

Teaching a section of this course in a non-traditional shortened format.

Course prefix MGMT  Course number 680
Department Management
College/School Mays Business School
Academic Level Graduate
Effective term 2018-2019

Complete Course Title Business and Corporate Strategy
Abbreviated Course Title BUSINESS & CORP STRATEGY

Catalog course description

Prerequisites and Restrictions
Graduate classification.

Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings
Crosslisted With
No

Stacked
Stacked with
No
MGMT 680: Business and Corporate Strategy

Semester: 3
Credit Hour(s): 3
Contact Hour(s): 3
Lecture: 3
Lab: 0
Other: 0
Repeatable for credit? No
CIP/Fund Code: 5202010016
Default Grade Mode: Letter Grade (G)
Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.
Will be met just as in the regular full-length semester.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.
This shortened section will meet for 2730 minutes/45+ hours in a condensed timeframe—MW 2:00-5:15 p.m., 10/8 to 11/28 (except 11/19 and 11/21).

Will this course be taught as a distance education course? No
Is 100% of this course going to be taught in Texas? Yes
Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)

(MS-FINC) Master of Science in Finance

Elective (select program)

Course Syllabus

Syllabus: Upload syllabus
Upload syllabus: MGMT 680 Syllabus for MS-Flnt - Fall 2018.pdf
Letters of support or other documentation: No
Additional information

Reviewer Comments

George Cunningham (gbcunningham) (05/03/18 11:28 am): Not sure 750 minutes per credit hour is enough for the course.
Janet Gonzales (janet-gonzales) (05/04/18 1:17 pm): Rollback: LaRhesa Johnson requested the roll back on May
3 - this was prematurely sent forward to the FS consideration.
LaRhesa Johnson (lrjohnson) (05/07/18 2:42 pm): Rollback: Updates needed per Graduate Council request.
MGMT 680 – BUSINESS AND CORPORATE STRATEGY
Section 606 – Fall Minimester 2018
2:00 p.m. – 5:15 p.m. MW (October 15 – November 28)
Wehner 192

Instructor: David Flint, Ph.D.
Office: Wehner 401T
Phone: (979) 845-4851 (messages)
E-Mail: dflint@mays.tamu.edu
Office Hours: by appointment

COURSE OVERVIEW

Why do some organizations achieve their objectives, grow, and attract resources while others stagnate, become insolvent, or succumb to hostile takeovers? Possible answers to these questions can be found in the subject matter of this course. This course is about strategic thinking and the advantages that may accrue to organizations whose leaders think and act strategically in a programmatic and process oriented manner. The perspective taken in the course is that of the senior level general manager who is responsible for the performance of the total organization.

This perspective requires viewing the business entity holistically and analyzing its relationship with its broader environment and with other competitor organizations. The class will involve integrating the knowledge you have learned in the different functional areas of business such as accountancy, finance, marketing, management, operations, information technology, human resource management, and economics.

Effectively integrating the activities of these functional areas requires developing a clear sense of the organization’s mission, objectives, and strategies that serve to enhance its organizational performance. To do this, managers must rely heavily on conceptual and analytical skills. Case analysis and simulated competitive environments will be used in this course to provide you with opportunities to analyze, select, articulate, and defend strategic decisions that can be formulated using course material, concepts, and tools.
**Course Learning Outcomes**

At the completion of the course, successful students should be able to

- **understand, describe, and assess** the Strategic Management Process and factors that affect Strategic Competitiveness
- **summarize, demonstrate, and draw conclusions from** both Industry / External Environmental Analysis and Internal Analysis processes for organizations
- **define, analyze, and recommend** both Business-Level and Corporate-Level Strategies within businesses
- **identify and explain** Competitive Dynamics within industries
- **recognize and classify** International Strategies implemented by businesses

**Catalog Description**

The nature of strategy and its relationship with performance. Business level strategies, including product and cost differentiation, cooperation, and imitation impeding strategies. Corporate level strategies, including diversification, mergers and acquisitions, innovation and market share. Case analyses emphasized.

**Prerequisite:** Graduate classification.

**Course Materials - Required**


Used 12th edition books as well as rental and electronic versions of the text should be available. *The Wall Street Journal* is not required, but it is a very useful tool.
INSTRUCTOR’S OBJECTIVES

1. Each student should be able to recognize key organizational phenomena and apply analytical skills in a strategic manner to the identified phenomena at the functional, business, and corporate levels of organizations.

2. Each student should be able to apply operational and analytical techniques from accountancy, finance, marketing, management, etc. studied prior to this course while accomplishing goal number one as given above.

3. Each student should be able to analyze the competitive environment facing a firm from the local to the global level, including within that analysis an understanding of industry effects, non-market factors, and competitor behaviors.

4. Each student should be able to isolate distinctive competency and incompetency associated with an organization that are potential sources of competitive advantage or disadvantage.

5. Each student should be able to synthesize the results obtained by pursuing goals one through four as given above and formulate organizational strategies, recommend strategic goals and tactics, and develop a high-level plan for the implementation of the recommended strategic goals and tactics.

6. Each student should be able to persuasively communicate his or her analytical conclusions, formulation of strategy, strategic recommendations, and plans for implementation of strategic goals and tactics. Communication must be engaged in both verbal and written forms.

7. Each student should develop the ability to view the organization holistically, to recognize an organization’s role in the broader competitive and social environments, and to appreciate the responsibilities and potential power of top executives.

8. Each student should incorporate awareness of the diversity inherent in the modern global business environment and its potential effect on the conduct of business while pursuing the analytical goals as given above.

9. Each student should apply ethical reasoning and judgment in the pursuit of his or her analytical goals as given above. Ethical reasoning should also be considered in the formulation, recommendation, and implementation of strategic goals and tactics that result from the analytical goals.

10. Each student should improve his or her ability to work within a team environment that demands interdependent relationships among the individual team members’ activities to successfully accomplish team assignments.
**GRADING AND COURSE REQUIREMENTS**

The course requirements and evaluation of each student’s work in the course are based upon performance in several areas. Grade contributions and letter grade determination are shown below.

**GRADING** - The final course grade will be computed in the following manner:

### Individual Effort

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and Participation</td>
<td>50</td>
</tr>
<tr>
<td>Practice Simulation</td>
<td>30</td>
</tr>
<tr>
<td>One Current Event Summary</td>
<td>50</td>
</tr>
<tr>
<td>One Case Overview/Recommendation</td>
<td>50</td>
</tr>
<tr>
<td>Exam #1</td>
<td>100</td>
</tr>
<tr>
<td>Exam #2</td>
<td>100</td>
</tr>
</tbody>
</table>

**Subtotal for Individual Effort** 380

### Team Related Effort

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Participation</td>
<td>70</td>
</tr>
<tr>
<td>Team Performance Sim #1</td>
<td>30</td>
</tr>
<tr>
<td>Team Performance Sim #2</td>
<td>70</td>
</tr>
<tr>
<td>Team Strategy Journal Entries Sim #1</td>
<td>50</td>
</tr>
<tr>
<td>Team Strategy Journal Entries Sim #2</td>
<td>100</td>
</tr>
</tbody>
</table>

**Subtotal for Team Related Effort** 320

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**Total** 700 points
No grading curves will be used. Grades will be assigned based upon the number of points each student earns without regard to the grade distribution within the class. **NOTE: Grades are based on point totals not upon percentages of the total available points for the course.** Assignment of the final course letter grade will be based on the following point totals:

- 630 to 700 points: A
- 560 to 629 points: B
- 490 to 559 points: C
- 420 to 489 points: D
- 0 to 419 points: F

**Attendance Policy**

The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments. Absences from an exam/assignment/class will be excused only for a university-approved reason. Read [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07) for reasons that constitute an excused absence. For absences relating to injury or illness, read the information from the Student Health Center about the types of notes it will furnish: [http://shs.tamu.edu/medical-excuse](http://shs.tamu.edu/medical-excuse). Contrary to popular belief, it will not give you an excused absence. Excused absences are given by the instructor.

1. For absences of less than three business days we require both the Explanatory Statement for Absence from Class form (see [http://shs.tamu.edu/forms](http://shs.tamu.edu/forms)) and a valid note from a health care professional specifically stating the date and time you were seen. A note from the Student Health Center does not constitute an excused absence. Excusing these short-term absences is solely at the discretion of the instructor. If the instructor decides that it is an unexcused absence, you will not be allowed to take the make-up exam/assignment or get attendance credit for that day. Please note that when you sign these forms, you are saying that your injury or illness is too severe or contagious for you to attend class. Don’t take a chance on getting an unexcused absence just because you don’t feel great that day!
2. For absences of three or more business days (to include classes on Saturday), you must obtain a medical confirmation note from a medical provider. The Student Health Center or an off-campus medical professional can provide a medical confirmation. The medical confirmation note must contain the date and time of the illness and the medical professional’s confirmation that you are unable to attend class. The Student Health Center will work with you through Student Assistance Services to ensure that your instructor knows that you had a serious injury or illness.

The authenticity of all notes will be verified. You will be charged under the Aggie Honor Code if you provide false information.

Note: An absence for a non-acute medical service does NOT constitute an excused absence.

If you miss an exam/assignment/class, please e-mail your instructor, either before the exam/assignment/class or as soon as possible after missing the exam/assignment/class, but no later than the second business day after the date of absence. Failure to contact your instructor in writing within two days will make you ineligible to take the make-up exam/assignment or get credit for the class. Make sure you include your name, UIN, class and section, phone number, and reason for missing the exam/assignment/class. Bring the documentation of your absence the first day you return to class.

**MAKE-UP WORK POLICY**

Students with excused absences will receive adequate time and opportunities to submit the required deliverables that are delayed due to those absences. To submit work under the “make-up” policy requires documentation as specified in the TAMU student rules (see Student Rules: Rule 7 – http://student-rules.tamu.edu).

Students with unexcused absences will receive no credit for missed deliverables.
**Late Work Policy**

Any course deliverable turned in late will be discounted by 10% per day. "Late" means submitting a deliverable any time after the assignment deadline has passed. Deliverables submitted more than 72 hours late will not be graded.

**Exception:** Students with excused absences will receive adequate time and opportunities to submit work they missed due to absence. Students must provide documentation and notice to the instructor as specified in TAMU student rules. (Student Rules: Rule 7 -- [http://student-rules.tamu.edu](http://student-rules.tamu.edu)).

**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 White Creek Apartments (Building 62) at 701 West Campus Boulevard or call 979-845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Aggie Honor Code**

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

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. You can learn more about the Honor Council Rules and Procedures as well as your rights and responsibilities at the following URL:

[http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)
For each assignment or project that is submitted for grading in this course, students must affirm their commitment to the Aggie Honor Code with the following statement.

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Even if you do not explicitly state the above, by submitting any course deliverable, you affirm your adherence to the Aggie Honor Statement for that deliverable.

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, is sufficient grounds to initiate an academic dishonesty case.”
(http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx)

I will follow the steps and processes outlined in the Honor Council Rules and Procedures in all cases of academic misconduct in this class (see http://aggiehonor.tamu.edu/RulesAndProcedures).

**STATEMENT ON PLAGIARISM**

As commonly defined, plagiarism consists of passing off as one’s own, ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please review additional information provided under Student Rule 20 and Aggie Honor System Rules under “Plagiarism” (see Student Rule 20 http://student-rules.tamu.edu and Aggie Honor System Rules http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx).
FOOD AND DRINK IN THE CLASSROOM

We have beautiful, state-of-the-art classrooms in the Wehner Building. We want to maintain the high quality of these classrooms for current and future students. Thus, it is necessary for you to adhere to the established policy of no beverages (except water), food, tobacco products, or like items within the Wehner Building classrooms.

CLASS DISCUSSION - ATTENDANCE AND PARTICIPATION

Class discussions are critical to the learning process in this course. Therefore, students must be prepared to discuss assigned readings, current events, and cases when physically attending class. Preparation for class discussion requires a basic understanding of the facts and details in the class material. Additionally, students should analytically consider the facts and details in regard to developing a better understanding of the material in pursuit of the course goals given above. Discussion regarding text material, current events, and cases is heavily dependent upon the students’ abilities to develop and communicate an understanding of the multiple factors contributing to the success or failure of various business endeavors. The instructor will rate each student’s discussion participation for each class session and total the points earned in each session to arrive at a total for the course. Therefore, any single class session will determine only a portion of the class discussion participation points. Consistent performance throughout the course is necessary for successful participation.

Quality of participation is rated more highly than quantity of participation; nevertheless, some quantity of participation that is of acceptable quality is necessary to earn participation points. **Absences and tardiness for non-excused reasons do reduce the number of participation points earned by a student primarily because of the inability to earn points.** A student who attends a class session but never actually voices any relevant questions or raises points for discussion earns the equivalent of a C+/B- for the session. A student who attends a class session and voices a relevant, non-trivial question or raises a point for discussion moves solidly into the B or A- range during the class session. A student
who attends a class session and voices a very interesting question or raises a significant issue for discussion will move into the A range for the class session. The team Q&A sessions toward the end of the course are prime opportunities for students to participate. Reading text materials before class sessions and thinking about questions or issues to clarify will help students prepare to participate during lectures.

**Exams**

Two exams will be given during the course. Questions may consist of multiple choice, true or false, short answer, and definition questions along with essays. Material for the exams will come from textual information, additional lecture information, PPT slide information, and any assigned readings.

**Current Event Summary Paper**

Each student is required to submit one current event summary paper. A full explanation of the expectations for a current event summary paper and its submission will be provided during the first week of class. The goal of the paper is to allow a student to show that a current event involving a strategic issue (or multiple strategic issues) facing an organization (or multiple organizations) can be recognized, the key issues identified clearly, course material is linked to those issues, and a reasonable analysis of the circumstances can be offered to the reader. A current event summary paper is limited to four pages (double-spaced) at a maximum.

**Case Overview / Recommendation Papers**

Each student is required to submit one case overview paper. A full explanation of the expectations for a case discussion overview paper will be provided prior to the case discussion; however, one key aspect of the class component to be noted here is that an overview paper is limited to five pages (double-spaced) at a maximum. The purpose of an overview paper is to allow a student to demonstrate an ability to identify and prioritize key strategic issues for a company and offer reasonable, high-level recommendations that
address those issues. Overview papers must be submitted before the case is discussed in class.

**PARTICIPATION IN TEAMS**

One online feedback opportunity regarding team members' participation in teamwork will be provided to team members at the end of each simulation game. The instructor will consider the team member evaluations provided online. After using the evaluations to help assess how well individual team members participated within the teams, team participation points will be allocated to each individual from the points noted above. Less than adequate participation within a team will result in a reduction in the number of participation points awarded to an individual.

**TEAMS FOR THE COURSE**

This course requires teamwork. There is no feasible means by which the material can be adequately mastered or achieve the course’s desired goals without team efforts. Team sizes will depend upon class enrollment and will be discussed during the first class session. Separate and different sets of teams will be created for Simulation Game #1 and Simulation Game #2. Each team will be responsible for the following: 1) selecting a set of strategic decisions and playing the simulation game against other teams in the course, and 2) preparing strategic journal entries within the simulation game and engaging Q&A sessions about team strategies and subsequent performance in the simulation.

**WRITTEN DELIVERABLES FROM TEAMS**

Strategy journal entries in the simulation game should be of the quality and form that one would expect to present to managerial decision makers during formal business presentations. Grading considerations will encompass both content and technical proficiency. The strategy journal entries for this class should focus on the most critical strategic recommendation(s) for the team’s company and provide some thoughts regarding the implementation and future evaluation of the recommended strategic plan. There is no
set length for the journal entries and quality of thought and reasoning is preferred over quantity of output.

**INTERNAL TEAM DYNAMICS**

The instructor of the course is ultimately responsible for assigning the grades to individual team members for their participation in the team efforts; however, the instructor will give serious consideration to the information gathered via the team participation feedback opportunities noted above in this syllabus. Not all team members are guaranteed to receive equivalent grades for the team’s performance in the course. This will be reflected primarily through the team participation points as discussed above.

Team dynamics are an important and unavoidable part of this course and of life in general. Suggestions for successful team interactions follow:

1. Attempt to find compatible people (schedules, project ideas, personality types, etc.) with whom to work.
2. Establish good lines of communication among the team members with multiple means of contact.
3. Develop clear goals regarding team tasks and document them for all team members.
4. Assign individual responsibilities for tasks that are understood and agreed to by all team members.
5. Resolve any misunderstandings quickly and with face-to-face meetings whenever possible.
6. Take advantage of the time set aside by the instructor of the course for team work or interacting with the instructor regarding the team work.
7. Keep a good attitude by focusing on desired outcomes rather than team dynamics.

**CONDUCT AND CONSEQUENCES**

The intention of the instructor of this course is to provide a learning experience that will help prepare the students for the professional business world and the ranks of those who
will have responsibility for the conduct of business in a highly competitive market. Given that intention, the tone of the class will be set at a professional level with respect for the individuals in the class and the process of learning. Debate and questioning is an important part of the class and will be vigorous at times, but these activities are not meant to demean or attack students. Disagreement is not disrespect and is often appropriate to further understanding. However, any student who does not participate in the class in a professional and courteous manner may be assured that the instructor will pursue university approved means to either improve the student’s behavior or remove the student from the course.

Professionalism is important in the conduct of business. The practice of being punctual, exhibiting good levels of preparation and participation, attitude, and a student’s style used to question and debate all will affect how a student’s level of professionalism is perceived. As noted above, students are rewarded with points for behavior that is consistent with a professional business mindset, such as punctuality and participation. Students are not rewarded for behavior that is not consistent with that mindset. Take the opportunity given in this class to improve your preparation for future careers in business.

**DETAILS FOR WRITTEN ASSIGNMENTS**

Incorrect grammar, punctuation, spelling, or a poorly written assignment will significantly affect the grade given to an assignment. As noted above in the “Grading” section of the syllabus, a percentage of points on each written assignment will be awarded based upon the technical aspects of the material. Do not take the technical aspects of the written assignments lightly. Effective written communication is based upon knowing and appropriately utilizing the rules of written language. Employers value people who can clearly express themselves with written words. Use this course’s assignments to help strengthen and expand your written communication skills.

Written assignments in hard copy form should be turned in on standard 8.5” by 11” paper with no larger than 1.5” margins along the sides, top, or bottom. Margins should not be less than 0.5” on the sides, bottom or top of the paper. Double line or one-and-one-half line spacing is required. Acceptable fonts include Times Roman, Courier, Arial, Helvetica, or any other standard, easily readable type. Font size should not be larger than 12 and should not be smaller than 10, except for headings, titles, graphical legends, within exhibits, or in
other portions of the assignment that are not part of the main text. A cover page is required. Special bindings, plastic covers, color printing, and other “special” features of written assignments are not specifically required and will not affect the grading of the material. The assignment should simply be attractive and easy to read without extraneous clutter.

References that indicate where students are finding company and industry information must be submitted. After watching students struggle with references and citations within the assignments over many semesters, the instructor decided to impose some standardization upon referencing within assignments. Therefore, use of the APA style for referencing is required. The West Campus Library website maintains information about the use of APA style referencing.

https://wcl.library.tamu.edu/assets/pdf/WCLCitationGuide.pdf

Also, please note the proper use of subject, verb, and pronoun agreement when writing. If “company” or the name of a company (e.g., Apple) is first used in a singular mode, then all subsequent verbs and pronouns should reflect that singular state. An example follows:

“Apple makes iPhones. It also produces iPads. Its cash reserve is enormous. Some people think it may become the first trillion dollar company by market capitalization. Samsung and Google are two of its competitors. They are successful, but not as successful as it is.”
# Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td><strong>Intro to Course</strong></td>
<td>Syllabus/Lecture</td>
</tr>
<tr>
<td>Oct 15 – 17</td>
<td><strong>Strategic Management and Strategic Competitiveness</strong></td>
<td>Chapter 1</td>
</tr>
<tr>
<td></td>
<td>The External Environment: Opportunities, Threats, Industry Competition, and Competitor Analysis</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>Oct 15 - 21</td>
<td><strong>Introduction to GoVenture CEO Simulation</strong></td>
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<td></td>
<td>and Individual Practice Rounds (3 Required)</td>
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<tr>
<td><strong>Week 2</strong></td>
<td><strong>The Internal Environment: Resources, Capabilities, and Core Competences</strong></td>
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<tr>
<td>Oct 22 – 24</td>
<td><strong>Business Level Strategy</strong></td>
<td>Chapter 3</td>
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<td><strong>Competitive Rivalry and Competitive Dynamics</strong></td>
<td>Chapter 4</td>
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<td></td>
<td><strong>Discussion of Current Events &amp; Strategy</strong></td>
<td>Chapter 5</td>
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<tr>
<td></td>
<td><strong>Simulation Game #1 Team Assignments</strong></td>
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<tr>
<td>Oct 24</td>
<td><strong>Simulation Game #1 – Round 1</strong></td>
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<tr>
<td>Oct 26</td>
<td><strong>Simulation Game #1 – Round 2</strong></td>
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<tr>
<td>Oct 28</td>
<td><strong>Simulation Game #1 – Round 3</strong></td>
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<tr>
<td><strong>Week 3</strong></td>
<td><strong>Corporate-Level Strategy</strong></td>
<td>Chapter 6</td>
</tr>
<tr>
<td>Oct 29 – 31</td>
<td>and Catch Up Day on Monday</td>
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<tr>
<td></td>
<td><strong>Exam #1 Wednesday 2:00 – 3:30 PM</strong></td>
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<tr>
<td></td>
<td><strong>Merger and Acquisition Strategies</strong></td>
<td>Chapter 7</td>
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<tr>
<td></td>
<td><strong>Discussion of Current Events &amp; Strategy</strong></td>
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<tr>
<td>Oct 29</td>
<td><strong>Simulation Game #1 – Round 4</strong></td>
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<tr>
<td>Oct 31</td>
<td><strong>Simulation Game #2 Team Assignments</strong></td>
<td></td>
</tr>
</tbody>
</table>
Week 4

Nov 5 – 7  Cooperative Strategy  Chapter 9
Corporate Governance  Chapter 10
Discussion of Current Events & Strategy

Nov 6  Simulation Game #2 – Round 1
Nov 11  Simulation Game #2 – Round 2

Week 5

Nov 12 – 14  Organizational Structure and Control  Chapter 11
Strategic Leadership  Chapter 12
Discussion of Current Events & Strategy

Nov 13  Simulation Game #2 – Round 3
Nov 19  Simulation Game #2 – Round 4

Week 6  No Class Sessions Held

Week 7

Nov 26 – 28  Case Discussion – Bulembu Water Enterprise  Monday
Simulation Game Debrief
Discussion of Current Events & Strategy
Exam #2  Wed 2:00 PM – 3:30 PM

The Case Overview / Recommendation Paper focused on Bulembu Water Enterprise is due Monday December 4 before 2:15 PM to avoid a late penalty. Two hard copies are required.

**IMPORTANT CAVEAT**

Given the uncertainty inherent in life, circumstances may cause the scheduled activities and materials of this course to vary in some degree from that which is outlined herein. Should changes to the activities and requirements of this course become necessary, the instructor will discuss any changes with the students and the details of this syllabus will be amended accordingly.
Course Change Request

Viewing: **NFSC 642 : Nutritional Biochemistry II**

Formerly known as: **NUTR 642**

Last approved: 01/31/18 3:25 am

Last edit: 06/28/18 9:34 am

Changes proposed by: kcowell

Catalog Pages referencing this course

<table>
<thead>
<tr>
<th>Catalog Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFSC 642: Department of Nutrition and Food Science</td>
</tr>
<tr>
<td>NFSC - Nutrition and Food Science</td>
</tr>
</tbody>
</table>

Faculty Senate Number

**Contact(s)**

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kristin de Ruiter</td>
<td><a href="mailto:kderuiter@tamu.edu">kderuiter@tamu.edu</a></td>
<td>979-845-1735</td>
</tr>
</tbody>
</table>

Rationale for Course

**Edit**

**The proposed changes are to meet the demand/interest of students.**

Course prefix: **NFSC**

Course number: **642**

Department: Nutrition & Food Science

College/School: Agriculture & Life Sciences

Academic Level: Graduate

Academic Level (alternate): Undergraduate

Effective term: **2019-2020 2018-2019**

Complete Course Title:
Nutritional Biochemistry II

Abbreviated Course Title:
NUTRITIONAL BICH II

Catalog course description

Integration of nutrition, biochemistry and other life sciences focusing on nutrients and their needs in healthy and unhealthy individuals; macronutrients and their metabolism and the pertinent regulation; nutrient sensing and signaling pathways; nutritional and hormonal regulation of gene expression; commonly used nutritional and biochemical assays. Mechanisms through which specific nutrients modulate intracellular signal transduction and gene expression; molecular mechanisms by which nutrition modulates disease states such as atherosclerosis, cancer and arthritis.

Prerequisites and Restrictions

NFSC 475, BICH 410, BICH-431 or equivalent.

Concurrent Enrollment: No
The course should not have catalog prerequisites or concurrent enrollment be enforced. Crosslistings are also not enforced. The course is not stacked with any other course.

The course credit hours are 3, with 3 contact hours per week. The course is not repeatable for credit. It is not a repeatable course. The CIP/Fund Code is 3019010002, and the default grade mode is Letter Grade (G). Alternate grade modes include Satisfactory/Unsatisfactory.

The method of instruction is Lecture. Will sections of this course be taught as non-traditional? The answer is No. Will this course be taught as a distance education course? The answer is No. Is 100% of this course going to be taught in Texas? The answer is Yes. Will classroom space be needed for this course? The answer is Yes.

This will be a required course for the following programs:

- (MS-NUTR) Master of Science in Nutrition

### Course Syllabus

- Syllabus: Upload syllabus
- Upload syllabus
- Letters of support or other documentation: No
- Additional information: Change approved via prefix change request. [https://nextcatalog.tamu.edu/miscadmin/?key=60/]
- Reviewer Comments: Terra Bissett (t.bissett) [06/28/18 9:35 am]: Minor edits made to form. Syllabus is not required for this type of change.
8/17/2018

Reported to state?

Add

No

Key: 12002
Course Change Request

Date Submitted: 06/14/18 9:07 am

Viewing: PETE 612 : Unconventional Oil and Gas Reservoirs

Last edit: 06/14/18 9:07 am

Changes proposed by: e-schuler

Catalog Pages referencing this course

Catalog course description

As conventional oil and gas resources are depleted, unconventional resources, including heavy oil and gas from low-permeability sandstones, fractured shales, coal bed, and hydrates, will assume greater roles in meeting USA and world energy demands; this course emphasizes resources, geologic and geographic occurrences, recovery technology and economics of unconventional hydrocarbon resources.

Prerequisites and Restrictions

Graduate classification in petroleum engineering, geology or geophysics.

Should catalog prerequisites / concurrent enrollment be enforced?

No

Crosslistings

No

Stacked

No

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eleanor Schuler</td>
<td><a href="mailto:e-schuler@tamu.edu">e-schuler@tamu.edu</a></td>
<td>9798458402</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

Department

Petroleum Engineering

College/School

College of Engineering

Academic Level

Graduate

Effective term

2018-2019

Complete Course Title

Unconventional Oil and Gas Reservoirs

Abbreviated Course Title

UNCONVENTIONAL OIL GAS

Catalog course description

As conventional oil and gas resources are depleted, unconventional resources, including heavy oil and gas from low-permeability sandstones, fractured shales, coal bed, and hydrates, will assume greater roles in meeting USA and world energy demands; this course emphasizes resources, geologic and geographic occurrences, recovery technology and economics of unconventional hydrocarbon resources.

Prerequisites and Restrictions

Graduate classification in petroleum engineering, geology or geophysics.

Should catalog prerequisites / concurrent enrollment be enforced?

No

Crosslistings

No

Stacked

No

Credit Hour(s)

3

Contact Hour(s)

Lecture: 3
Lab: 0
Other: 0
Total: 3

Approval Path

1. 06/14/18 9:09 am
   Kathy Beladi (k-beladi): Approved for PETE Department Head

2. 06/14/18 10:23 am
   Terra Bissett (t.bissett): Approved for Curricular Services Review

3. 06/14/18 4:52 pm
   Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR

4. 06/28/18 5:35 pm
   Harry Hogan (h-hogan): Approved for EN Committee Chair GR

5. 06/28/18 5:37 pm
   Harry Hogan (h-hogan): Approved for EN College Dean GR

6. 07/03/18 8:41 am
   LaRhesa Johnson (lrjohnson): Approved for GC Preparer

7. 07/16/18 1:54 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
Repeatable for credit? No

CIP/Fund Code 1425010006

Default Grade Mode Letter Grade (G)

Method of instruction Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met. Distance learning courses taught by the Department of Petroleum Engineering, provide the same lectures, assignments, and exams as on campus face-to-face courses. Student learning outcomes are evaluated by gradable assignments, which are distributed and collected through eCampus and exams are proctored by approved exam centers or equivalent.

Hours Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met. The credit hours of distance learning courses by the Department of Petroleum Engineering are ensured to be equivalent to on-campus face-to-face exams. In addition to the same lectures, DL students have equal opportunities to interact with instructors through email and online chat during office hours. For each three-credit hour course, a distance learning course accounts for 45-48 hours of instruction time.

Will this course be taught as a distance education course? Yes No

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MEN-PETE) Master of Engineering in Petroleum Engineering</td>
</tr>
<tr>
<td>(MS-PETE) Master of Science in Petroleum Engineering</td>
</tr>
<tr>
<td>(PHD-PETE) Doctor of Philosophy in Petroleum Engineering</td>
</tr>
</tbody>
</table>

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus 20180411_(v3_TAB)_PETE_612_Syllabus_(COE_Format)_doc.pdf
<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information</td>
<td></td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sandra Williams (sandra-williams) (04/04/18 11:59 am): Rollback: You will need to include a traditional syllabus and a non-traditional syllabus (if applicable).</td>
</tr>
<tr>
<td></td>
<td>Jennifer Veracruz (jveracruz) (04/10/18 2:42 pm): Rollback: Needs updated syllabus</td>
</tr>
</tbody>
</table>
Course title and number: Petroleum Engineering 612 — Unconventional Oil And Gas Reservoirs
Term: Fall 2018
Meeting times and location: TR 07:05 pm-08:20 pm RICH 319

Course Description and Prerequisites

Graduate Catalog: As conventional oil and gas resources are depleted, unconventional resources, including heavy oil and gas from low-permeability sandstones, fractured shales, coal beds, and hydrates, will assume greater roles in meeting USA and world energy demands; this course emphasizes resources, geologic and geographic occurrences, recovery technology and economics of unconventional hydrocarbon resources.

Course Outline/Topics:

1. Introduction to Unconventional Reservoirs
   - What are unconventional resources?
   - Where do they occur?
   - Economic significance of unconventional reservoirs.
   - Technical, economic, political, and environmental constraints on development.

2. Overview of Depositional and Petroleum Systems
   - Introduction to sedimentary depositional systems and petroleum systems concepts
   - Self-sourcing reservoirs
   - Sandstone and carbonate reservoirs

3. Shale Reservoirs (Gas and Oil)
   - Introduction to shale reservoirs.
   - Origins, organic contents/hydrocarbon origin, resources, exploration, reservoir characteristics.
   - Methods of assessment.
   - Drilling, completion, and stimulation methods.
   - Facilities, reservoir management, limitations on development
   - Water and environmental issues.
   - Selected North American Shale Plays: Barnett Shale, Haynesville Shale, Eagle Ford Shale, Marcellus Shale, Utica/Point Pleasant, Niobrara Shale, Codell, Monthey Shale, Duvernay Shale, Delaware Basin (Avalon Shale, Bone Spring, Wolfcamp Shale), etc.

4. Coalbed Methane Gas (CBM)
   - Introduction to coalbed methane reservoir systems.
   - Occurrences, hydrocarbon origins, resources, exploration methods, reservoir characteristics
   - Methods of assessment.
   - Drilling, completion, and stimulation methods.
   - Facilities, reservoir management, limitations on development
   - Water and environmental issues
   - Selected coalbed methane plays: San Juan Basin, Powder River Basin, Black Warrior Basin, international activity, etc.

5. Tight Gas
   - Introduction to tight gas.
   - Occurrences, hydrocarbon origins, resources, exploration methods, reservoir characteristics
   - Drilling, completion, and stimulation methods.
   - Facilities, reservoir management, limitations on development
   - Selected tight gas plays: Travis Peak/Cotton Valley (Texas), Mesaverde (Colorado), Bossier (Texas), etc

6. Natural Gas Hydrates
   - Introduction to natural gas hydrates.
   - Occurrences, hydrocarbon origins, resources, exploration methods, reservoir characteristics
   - Methods of natural gas production from hydrates
Learning Outcomes or Course Objectives

- The students will be able to understand the role the unconventional resources play in the USA and the global energy spectrum.
- The students will be able to use petrophysical methods to characterize the unconventional resources.
- The students will be able to understand oil/gas storage in the unconventional resources and assess hydrocarbons in-place.
- The students will develop the functional knowledge and understanding for the current challenges in drilling, production, and reservoir management.
- The students will be able to understand oil/gas transport during production from unconventional resources and develop theoretical methods to predict the oil/gas production.

Instructor Information

Name: Dr. I. Yucel AKKUTLU
Telephone number: +1.979.845.4069
Email address: akkutlu@tamu.edu (please always use email to contact)
Office hours: MW 6:30pm-7:30pm
Office location: Richardson 619

Name: Dr. Thomas BLASINGAME
Telephone number: +1.979.845.2292
Email address: t-blasingame@tamu.edu (please always use email to contact)
Office hours: TBD
Office location: Richardson 821A

Textbook and/or Resource Material

No textbook needed. A collection of articles will be used throughout the semester.

Grading Policies

1. Students are expected to attend class every session. Resident (not Distance Learning students) are REQUIRED to attend class every session. Distance Learning students are expected review lecture materials within 24 hours of the lecture being given. This is not a casual requirement, penalties can and will be assigned for missing class.

2. Policy on Grading
   a. All work in this course is graded on the basis of answers only — any partial credit is at the discretion of the instructor.
   b. All work requiring calculations shall be properly and completely documented for credit.
   c. All grading shall be done by the instructor, or under his direction and supervision, and the decision of the instructor is final.

3. Policy on Regrading
   a. Only in very rare cases will exams be considered for re-grading — partial credit (if any) is not subject to appeal.
   b. Work which, while possibly correct, but cannot be followed, will be considered incorrect.
   c. Grades assigned to homework problems will not be considered for regrading.
   d. If regrading is necessary, the student is to submit a letter to the instructor explaining the situation that requires consideration for regrading, the material to be regraded must be attached to this letter. The letter and attached material must be received within one week from the date returned by the instructor.

4. The grade for a late assignment is zero. Homework will be considered late if it is not turned in at the start of class on the due date. If a student comes to class after homework has been turned in and after class has begun, the student's homework will be considered late and given a grade of zero. Late or not, all assignments must be turned in. A course grade of Incomplete will be given if any assignment is missing, and this grade will be changed only after all required work has been submitted.

5. Each student should review the University Regulations concerning attendance, grades, and scholastic dishonesty. In particular, anyone caught cheating on an examination or collaborating on an assignment where collaboration is not specifically authorized by the instructor will be removed from the class roster and given an F (failure grade) in the course.
Grading Scale

Basis for Grade:
[Grade Cutoffs (Percentages) → A: > 90  B: 89.99 to 80  C: 79.99 to 70  D: 69.99 to 60  F: < 59.99]

Reading Assignments  10 percent
Homework/Projects   40 percent
Midterm Examination   25 percent
Final Examination    25 percent
Total = 100 percent

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week/Assignment</th>
<th>Topic</th>
<th>Required Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/ —</td>
<td>Introduction to Unconventional Resources</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>2/Hwk 1 Due</td>
<td>Depositional and Petroleum Systems</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>3/Hwk 2 Due</td>
<td>Shales</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>4/Hwk 3 Due</td>
<td>Shales</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>5/Hwk 4 Due</td>
<td>Shales</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>6/Hwk 5 Due</td>
<td>CBM</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>7/Hwk 6 Due</td>
<td>CBM</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>8/ —</td>
<td>CBM</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>9/Midterm Exam</td>
<td>Tight Gas</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>10/ —</td>
<td>Tight Gas</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>11/Hwk 7 Due</td>
<td>Tight Gas</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>12/ —</td>
<td>Hydrates</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>13/Project Reports Due</td>
<td>Hydrates</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>14/ —</td>
<td>Additional Topics</td>
<td>Class Notes/Articles</td>
</tr>
<tr>
<td>15/Final Exam</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Scholastic Dishonesty:
THE STUDENT IS HEREBY WARNED THAT ANY/ALL ACTS OF SCHOLASTIC DISHONESTY WILL RESULT IN AN "F" GRADE FOR ALL ASSIGNMENTS IN THIS COURSE. As a definition, "scholastic dishonesty" will include any or all of the following acts:
• Unauthorized collaborations — you are explicitly forbidden from working together.
• Using work of others — you are explicitly forbidden from using the work of others — "others" is defined as students in this course, as well as any other person. You are specifically required to perform your own work.

Work Requirements: (layout/format/etc.)
• You must show ALL work — as appropriate, YOU MUST:
  — WORK: You must show all details in your calculations (no skipped steps) — all portions of all analysis relations must be shown.
  — UNITS: You must show all units in all calculations.
• Work layout: (as appropriate for a given problem)
  — NEATNESS: You will be graded on the neatness of your work.
  — LABELS: All work, trends, and features on every plot MUST be appropriately labeled — no exceptions.
    ■ Work: All work must be fully labeled and documented — equations, relations, calculations, etc.
    ■ Trends: This includes the slope, intercept, and the information used to construct a given trend.
    ■ Features: Any description of features/points of interest on a given trend (times, pressures, etc.).
  — LINES: Use appropriate drafting care in construction of lines, trends, arrows, etc.
  — SKETCHING: Take great care in any sketches you create/use in your work.
• Plots/Plotting: (as required)
  — SYMBOLS: Use symbols for "data" (if "data" are presented — e.g., reference solutions given as discrete data points).
  — LINES: Use lines to represent models.
  — COLORS: Use black for all axes and gridlines. Use primary colors (red, green, blue), avoid pastel colors.
  — etc: Please DO NOT use a border or "frame" around your plots.
Scholastic Dishonesty:

THE STUDENT IS HEREBY WARNED THAT ANY/ALL ACTS OF SCHOLASTIC DISHONESTY WILL RESULT IN AN "F" GRADE FOR ALL ASSIGNMENTS IN THIS COURSE. As a definition, "scholastic dishonesty" will include any or all of the following acts:

- Unauthorized collaborations — you are explicitly forbidden from working together.
- Using work of others — you are explicitly forbidden from using the work of others — "others" is defined as students in this course, as well as any other person. You are specifically required to perform your own work.

Work Standard:

Simply put, the expectation of the instructors is that "perfection is the standard" — in other words, your work will be judged against a perfect standard. If your submission is not your very best work, then do not submit it. You have an OBLIGATION to submit only your very best work.

Student Obligation:

You must prepare your work as instructed above, or you will be assessed SEVERE grading penalties.

e-mail Protocols

In order to manage your correspondence, we require that you use the following protocol.

Subject Line: [YYYYMMDD] [YOURLASTNAME] Subject (date) (your last name) (Subject of your e-mail)

Body:

Dr. AKKUTLU/Dr. BLASINGAME:

I would like to enquire about the following:

* Question 1 ... (be clear and concise)
* Question 2 ... (be clear and concise)
* Question 3 ... (be clear and concise)

I thank you for your assistance.

YourFirstName YOURLASTNAME
(contact information)
E: [TAMU]
E: (personal)
T: (a phone contact) (We will NEVER call you without first sending an e-mail or text)

Comments:

- DO NOT FORWARD/REPLY TO EMAILS FROM ECAMPUS — SEND A NEW NOTE.
- The subject line is used to file e-mail (this is why this specific subject line is required).
- Every effort will be made to answer every e-mail, but PLEASE consult the syllabus for "administrative" issues.
- Questions by e-mail are preferred — e.g., issues/errors/etc. and/or help with issues relevant to the course.
- Courier New 10pt Bold font is required.

Americans with Disabilities Act (ADA) Statement

(Last Revision: 05 November 2015)
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity

Aggie Honor Code: (http://student-rules.tamu.edu/aggiecode)

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

Definitions of Academic Misconduct:

1. CHEATING: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. **FABRICATION:** Making up data or results, and recording or reporting them; submitting fabricated documents.

3. **FALSIFICATION:** Manipulating research materials, equipment or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

4. **MULTIPLE SUBMISSION:** Submitting substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.

5. **PLAGIARISM:** The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

6. **COMPLICITY:** Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty.

7. **ABUSE AND MISUSE OF ACCESS AND UNAUTHORIZED ACCESS:** Students may not abuse or misuse computer access or gain unauthorized access to information in any academic exercise. See Student Rule 22: [http://student-rules.tamu.edu/](http://student-rules.tamu.edu/)

8. **VIOLATION OF DEPARTMENTAL OR COLLEGE RULES:** Students may not violate any announced departmental or college rule relating to academic matters.

9. **UNIVERSITY RULES ON RESEARCH:** Students involved in conducting research and/or scholarly activities at Texas A&M University must also adhere to standards set forth in the University Rules.

For additional information please see: [http://student-rules.tamu.edu/](http://student-rules.tamu.edu/)

**Coursework Copyright Statement:** (Texas A&M University Policy Statement)

The handouts used in this course are copyrighted. By "handouts," this means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy them, unless you are expressly granted permission.

As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions about plagiarism and/or copying, please consult the latest issue of the *Texas A&M University Student Rules*, under the section "Scholastic Dishonesty."
Course Change Request

Date Submitted: 06/18/18 8:26 am

Viewing: **PETE 620 : Fluid Flow in Petroleum Reservoirs**

Last edit: 06/18/18 8:26 am

Changes proposed by: e-schuler

<table>
<thead>
<tr>
<th>Catalog Pages referencing this course</th>
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<tbody>
<tr>
<td>Harold Vance Department of Petroleum Engineering</td>
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<tr>
<td>PETE - Petroleum Engineering</td>
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**Contact(s)**

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eleanor Schuler</td>
<td><a href="mailto:e-schuler@tamu.edu">e-schuler@tamu.edu</a></td>
<td>9798458402</td>
</tr>
</tbody>
</table>

**Rationale for Course**

The proposed changes are part of a routine curriculum review.

**Course Information**

- **Course prefix**: PETE
- **Course number**: 620
- **Department**: Petroleum Engineering
- **College/School**: College of Engineering
- **Academic Level**: Graduate
- **Effective term**: 2018-2019
- **Complete Course Title**: Fluid Flow in Petroleum Reservoirs
- **Abbreviated Course Title**: FLUID FLOW PET RESERVO

**Catalog course description**

Analysis of fluid flow in bounded and unbounded reservoirs, wellbore storage, phase redistribution, finite and infinite conductivity fractures; dual-porosity systems.

**Prerequisites and Restrictions**

PETE 323.

| Should catalog prerequisites / concurrent enrollment be enforced? | No |
| Crosslistings | No |
| Stacked | No |

| Semester | 3 |
| Credit Hour(s) | 3 |
| Contact Hour(s) (per week): | 3 |
| Lab: | 0 |
| Other: | 0 |
| Total: | 3 |

**Approval Path**

1. PETE Department Head
2. Curricular Services Review
3. EN Committee Preparer GR
4. EN Committee Chair GR
5. EN College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner
### Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Distance learning courses taught by the Department of Petroleum Engineering, provide the same lectures, assignments, and exams as on campus face-to-face courses. Student learning outcomes are evaluated by gradable assignments, which are distributed and collected through eCampus and exams are proctored by approved exam centers or equivalent.

### Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

The credit hours of distance learning courses by the Department of Petroleum Engineering are ensured to be equivalent to on-campus face-to-face exams. In addition to the same lectures, DL students have equal opportunities to interact with instructors through email and online chat during office hours. For each three-credit hour course, a distance learning course accounts for 45-48 hours of instruction time.

### Will this course be taught as a distance education course?

Yes

### I verify that I have reviewed the FAQ for Export Control Basics for Distance Education.

Yes

### Is 100% of this course going to be taught in Texas?

Yes

### Will classroom space be needed for this course?

Yes

This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MEN-PETE) Master of Engineering in Petroleum Engineering</td>
</tr>
<tr>
<td>(MS-PETE) Master of Science in Petroleum Engineering</td>
</tr>
<tr>
<td>(PHD-PETE) Doctor of Philosophy in Petroleum Engineering</td>
</tr>
</tbody>
</table>

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**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus: [20180617_(v1_TAB)_TAMU_COE_syllabus_template_2018_(doc).pdf](https://nextcatalog.tamu.edu/courseleaf/approve/?role=Faculty%20Senate)
| Letters of support or other documentation | No |
| Additional information |  |
| Reviewer Comments | Sandra Williams (sandra-williams) (04/04/18 12:00 pm): Rollback: You will need to include a traditional syllabus and a non-traditional syllabus (if applicable).  
Jennifer Veracruz (jveracruz) (04/10/18 2:43 pm): Rollback: Needs updated syllabus |

Key: 12469
Course Description and Prerequisites

Graduate Catalog: Analysis of fluid flow in bounded and unbounded reservoirs, wellbore storage, phase redistribution, finite and infinite conductivity vertical fractures, dual-porosity systems.

Translation: Development of skills required to derive “classic” problems in reservoir engineering and well testing from the fundamental principles of mathematics and physics. Emphasis is placed on a mastery of fundamental calculus, analytical and numerical solutions of 1st and 2nd order ordinary and partial differential equations, as well as extensions to non-linear partial differential equations that arise for the flow of fluids in porous media.

Course Objectives

Module 1: Advanced Mathematics Relevant to Problems in Engineering

- Fundamental Topics in Mathematics:
  - Work fundamental problems in algebra and trigonometry, including partial fractions and the factoring of equations.
  - Perform elementary and advanced calculus: analytical integration and differentiation of elementary functions (polynomials, exponentials, and logarithms), trigonometric functions (sin, cos, tan, sinh, cosh, tanh, and combinations), and special functions (Error, Gamma, Exponential Integral, and Bessel functions).
  - Derive the Taylor series expansions and Chebyshev economizations for a given function.
  - Derive and apply formulas for the numerical differentiation and integration of a function using Taylor series expansions. Specifically, be able to derive the forward, backward, and central “finite-difference” relations for differentiation, as well as the “Trapezoidal” and “Simpson’s” Rules for integration.
  - Apply the Gaussian and Laguerre quadrature formulas for numerical integration.

- Numerical Differentiation and Integration of Analytic Functions:
  - Be able to recognize, develop, and apply the Taylor series (finite-difference) formulas for numerical differentiation of an analytic function.
  - Be able to recognize and apply the following formulas and methodologies for numerical integration.
    - Trapezoidal rule: (with correction) (be able to develop — see Hornbeck):
    - Simpson's rule: (with correction) (be able to develop — see Hornbeck):
    - Gaussian quadrature: (weights and abscissas from Abramowitz and Stegun: Handbook of Mathematical Functions, Table 25.4, pgs. 916-919).
    - Laguerre quadrature: (weights and abscissas from Abramowitz and Stegun: Handbook of Mathematical Functions, Table 25.9, pgs. 923).

- Solution of First and Second Order Ordinary Differential Equations:
  - First Order Ordinary Differential Equations:
    - Classify the order of a differential equation (order of the highest derivative).
    - Verify a given solution of a differential equation via substitution of a given solution into the original differential equation.
    - Solve first order ordinary differential equations using the method of separation of variables (or separable equations).
    - Derive the method of integrating factors for a first order ordinary differential equation.
    - Apply the Euler and Runge-Kutta methods to numerically solve first order ordinary differential equations.
  - Second Order Ordinary Differential Equations:
    - Develop the homogeneous (or complementary) solution of a 2nd order ordinary differential equation (ODE) using $y=ae^{mx}$ as a trial solution.
    - Develop the particular solution of a 2nd order ordinary differential equation (ODE) using the method of undetermined coefficients.
- Application of the Runge-Kutta Method:
  — Be able to use Runge-Kutta methods to numerically solve 1st order ordinary differential equations.
  — Be able to use Runge-Kutta methods to numerically solve 2nd order ordinary differential equations.

- The Laplace Transform:
  - Fundamentals of the Laplace Transform:
    — Be able to state the definition of the Laplace transformation and its inverse.
    — Be able to prove that the Laplace transform is a linear operator.
    — Be able to derive the Laplace transforms given on page 98 of the Spiegel text.
    — Be familiar with, and be able to derive, the operational theorems for the Laplace transform as given on pages 101-102 of the Spiegel text.
  - Properties of the Laplace Transform:
    — Be familiar with the "unit step" function shown below
    — Be able to develop and apply the Laplace transform formulas for the discrete data functions shown below.
    — Be able to develop the Laplace transform of a given differential equation and its initial condition(s). This requires the Laplace transform of each time-derivative, then substitution into the differential form, the result is an algebraic expression in terms of $s$ and $\dot{\cdot}$.
      + Step Data Function
      + Piecewise Linear Data Function (Roumboutsos and Stewart Method)
      + Piecewise Log-Linear Data Function (Blasingame Method)
  - Applications of the Laplace Transform to Solve Linear Ordinary Differential Equations:
    — Be able to develop the Laplace transform of a given differential equation and its initial condition(s). This requires the Laplace transform of each time-derivative, then substitution into the differential form, the result is an algebraic expression in terms of $s$ and $\dot{\cdot}$.
    — Be able to resolve the algebra resulting from the Laplace transform of a given differential equation and its initial condition(s) into a closed and hopefully, invertible form.
    — Be able to invert the closed form Laplace transform solution of a given differential equation using the fundamental properties of Laplace transforms, Laplace transform tables, partial fractions.
  - Numerical Laplace Transform and Inversion:
    — Be able to use the Gauss-Laguerre integration formula for numerical Laplace transformation. The Laguerre quadrature weights, $w_k$, and abscissas, $x_k$, can be obtained from Abramowitz and Stegun.
    — Be familiar with the development of the Gaver formula for numerical Laplace transformation, and note its similarity to the Widder inversion formula given in the Cost (AIAA Journal) paper.
    — Be able to use the Gaver and Gaver-Stehfest numerical inversion algorithms for the inversion of Laplace transforms.

- Introduction to Special Functions:
  - Special Functions in Petroleum Engineering Applications
    — Be familiar with and be able to compute the following special functions which have applications in petroleum engineering:
      + Exponential Integral
      + Gamma and Incomplete Gamma Functions
      + Error and Complimentary Error Functions
      + Bessel Functions
      + Modified Bessel Functions and the integrals of the Modified Bessel Functions
  - Bessel Functions
    — Be familiar with the following Bessel functions:
      + Bessel Functions: $J_n(x)$ and $Y_n(x)$, where Bessel's differential equation is given as: (Abramowitz and Stegun; Chapter 9, Eq. 9.1.1)
      + Modified Bessel Functions: $I_0(x)$ and $K_0(x)$, where Bessel's "modified" differential equation is given as: (Abramowitz and Stegun; Chapter 9, Eq. 9.6.1)
    — Be able to use the Bessel functions in numerical problem solving efforts and theoretical developments; especially recurrence relations, integral definitions, and Laplace transforms.

Module 2: Petrophysical Properties
- Introduction to Porosity and Permeability Concepts:
  — Be able to recognize and classify rock types as clastics (sandstones) and carbonates (limestones, chalks, dolostones) and be familiar with the characteristics of porosity that these rocks exhibit.
  — Be able to distinguish between effective and total porosity and be familiar with the meanings of primary (or depositional) porosity and secondary (or post-depositional) porosity.
  — Be familiar with factors which affect porosity. In particular, the shapes, arrangements, and distributions of grain particles and the effect of cementation, vugs, and fractures on porosity.
  — Be familiar with the concept of permeability for porous rocks and be aware of the correlative relations for porosity and permeability.
  — Be familiar with "friction factor"-"Reynolds Number" plotting concept put forth by Cornell and Katz for flow through porous media. Be aware that this plotting concept validates Darcy's law empirically (the unit slope line on the left portion of the plot, laminar flow).
● Development of a Semi-Empirical Concept of Permeability: Darcy’s Law:
  ■ Be able to develop a velocity/pressure gradient relation for modeling the flow of fluids in pipes (i.e., the Poiseuille equation).
  ■ Be familiar with the general assumptions and limitations of the Poiseuille equation.
  ■ Be able to derive the “units” of a Darcy (1 Darcy = 9.86923x10^{-9} cm²).
  ■ Be able to derive the field units form of Darcy’s law.

● Introduction to Capillary Pressure and Relative Permeability:
  ■ Be familiar with the concept of “capillary pressure” for tubes as well as for porous media—and be able to derive the capillary pressure relation for fluid rise in a tube:
  ■ Be familiar with and be able to derive the permeability and relative permeability relations for porous media using the “bundle of capillary tubes” model as provided by Nakornthap and Evans.
  ■ Be familiar with the concept of “relative permeability” and the factors which should and should not affect this function. Also, be familiar with the laboratory techniques for measuring relative permeability.

● Development of the Brooks-Corey-Burdine Equation for Permeability and the Development of a Type Curve Analysis Approach for Capillary Pressure Data:
  ■ Be able to derive the “field units” form of the Purcell-Burdine permeability equation.
  ■ Be familiar with and be able to derive the Brooks-Corey-Burdine equation for permeability based on the Purcell-Burdine permeability equation (as given above).
  ■ Be able to discuss the possible applications for the Brooks-Corey-Burdine permeability equation.
  ■ Be familiar with and be able to derive a type curve matching approach for capillary pressure data based on the Brooks-Corey model for capillary pressure and saturation.

● Electrical Properties of Reservoir Rocks:
  ■ Be familiar with the definition of the formation resistivity factor, as well as the effects of reservoir and fluid properties on this parameter.
  ■ Be familiar with and be able to use the Archie and Humble equations to estimate porosity given the formation resistivity factor.
  ■ Be familiar with the definition of the resistivity index, I, as well as the effects of reservoir and fluid properties on this parameter and also be familiar with the Archie result for water saturation.
  ■ Be familiar with the “shaly sand” models given by Waxman and Smits for relating the resistivity index with saturation and for relating formation factor with porosity.

● Development of a Type Curve Analysis Approach for Relative Permeability Data
  ■ Be familiar with and be able to derive the Burdine relative permeability equations (this derivation is provided in detail by Nakornthap and Evans).
  ■ Be familiar with and be able to derive the Brooks-Corey-Burdine equations for relative permeability based on the combination of the Burdine relative permeability equations (shown above) and the Brooks and Corey capillary pressure model.
  ■ Be familiar with and be able to derive a type curve matching approach for relative permeability data based on the Brooks-Corey-Burdine relative permeability models.

Module 3: Fundamentals of Flow in Porous Media

● Steady-State Flow Concepts: Laminar Flow
  ■ Derive the concept of permeability (Darcy’s Law) using the analogy of the Poiseuille equation for the flow of fluids in capillaries. Be able to derive the “units” of a “Darcy” (1 Darcy = 9.86923x10^{-9} cm²), and be able to derive Darcy’s Law in “field” and “SI” units.
  ■ Derive the single-phase, steady-state flow relations for the laminar flow of gases and compressible liquids using Darcy’s Law — in terms of pressure, pressure-squared, and pseudopressure, as appropriate.
  ■ Derive the steady-state “skin factor” relations for radial flow.

● Steady-State Flow Concepts: Non-Laminar Flow
  ■ Demonstrate familiarity with the concept of “gas slippage” as defined by Klinkenberg.
  ■ Derive the single-phase, steady-state flow relations for the non-laminar flow of gases and compressible liquids using the Forchheimer equation (quadratic in velocity) — in terms of pressure, pressure-squared, and pseudopressure, as appropriate.

● Material Balance Concepts:
  ■ Be able to identify/apply material balance relations for gas and compressible liquid systems.
  ■ Be familiar with and be able to apply the “H Havlena-Odeh” formulations of the oil and gas material balance equations.

● Pseudosteady-State Flow Concepts:
  ■ Demonstrate familiarity with and be able to derive the single-phase, pseudosteady-state flow relations for the laminar flow of compressible liquids in a radial flow system (given the radial diffusivity equation as a starting point).
  ■ Sketch the pressure distributions during steady-state and pseudosteady-state flow conditions in a radial system.

● Development of Diffusivity Equation: Pressure and Pseudopressure Forms, General and Radial Flow Geometries:
  ■ Be able to describe in words and in terms of mathematical expressions the mass continuity relation for flow through porous media.
Be able to develop the "diffusivity" equations for the flow of a slightly compressible liquid in porous media—
"pressure" form, general flow geometry.
- "Gradient-Squared" Case: General form for a slightly compressible liquid.
- "Small and Constant Compressibility" Case: Base relation for all developments in reservoir engineering
and well testing.
Be able to derive the pseudopressure/pseudotime forms of the diffusivity equation for cases where fluid
density and viscosity are functions of pressure for a general flow geometry.

Development of Diffusivity Equations for the Flow of a Real Gas: Pressure and Pressure-Squared and
Pseudopressure Forms:
- Be familiar with and be able to derive the single-phase diffusivity equations in terms of formation volume
factors for both the oil and gas cases. These results are given as:
- Be able to develop the general form of the diffusivity equation for single-phase gas flow in terms of pressure
(and p/z) — starting from the density formulation. These relations are given by:
- Be able to develop the diffusivity equation for single-phase gas flow in terms of the following:
pseudopressure, pressure-squared, and pressure.
  - "Pseudopressure" Formulation:
  - "Pressure-Squared" Formulation:
  - "Pressure" Formulation:

Development of Diffusivity Equations for the Multiphase Flow:
- Be able to develop the continuity relations for the oil, gas, and water phases in terms of the fluid densities.
  Assume that the gas phase includes gas liberated from the oil and water phases.
- Be able to write Darcy's law velocity relations for each phase.
- Be able to develop the mass flux relations for the oil, gas, and water phases in terms of the fluid formation
  volume factors. Again, assume that the gas phase includes gas liberated from the oil and water phases.
- Be able to develop the mass relations for the oil, gas, and water phases in terms of the fluid formation
  volume factors. As before, assume that the gas phase includes gas liberated from the oil and water phases.
- Assuming no capillary pressure forces, be able to develop the generalized diffusivity relations for each
  phase. (Martin Eqs. 1-3)
- NEGLECTING the and terms — be able to develop the diffusivity relations for each phase as shown by
  Martin (Eqs. 7-9)

Development of Diffusivity Equations for the Multiphase Flow — Martin's Saturation Equations and the Concept
of Total Compressibility:
- Be familiar with and be able to derive the Martin relations for total compressibility and the associated
  saturation-pressure relations (Eqs. 10 and 11).

Module 4: Reservoir Flow Solutions
- Dimensionless Variables and the Dimensionless Radial Flow Diffusivity Equation:
  - Be able to develop the dimensionless form of the single-phase radial flow diffusivity equation as well as the
    appropriate dimensionless forms of the initial and boundary conditions, including the developments of
dimensionless radius, pressure, and time.
    - The Dimensionless Diffusivity Equation
    - Dimensionless Initial and Boundary Conditions
      + Dimensionless Initial Condition
      + Dimensionless Inner Boundary Condition
      + Dimensionless Outer Boundary Conditions
        a. "Infinite-Acting" Reservoir
        b. "No-Flow" Boundary
        c. Constant Pressure Boundary
  - Be able to derive the conversion factors for dimensionless pressure and time, for both SI and "field" units.
- Solutions of the Radial Flow Diffusivity Equation Using the Laplace Transform
  - Be able to recognize that the Laplace transform of the dimensionless form of the single-phase radial flow
    diffusivity equation is the modified Bessel differential equation. Also, be able to write the general solution for
    this transformed differential equation.
  - Be able to develop the particular solution (in Laplace domain) for the constant rate and constant pressure
    inner boundary conditions and the infinite-acting reservoir outer boundary condition. Also, be able to use
    the van Everdingen and Hurst result to convert the constant rate case to the constant wellbore pressure
    case.
  - Be able to develop the real domain (time) solution for the constant rate inner boundary condition and the
    infinite-acting reservoir outer boundary condition using both the Laplace transform and the Boltzmann
    transform approaches. Also be able to develop the "log-approximation" for this solution.
- Laplace Transform Solutions of the Radial Flow Diffusivity Equation for a Bounded Circular Reservoir
  - Be able to derive the particular solutions (in Laplace domain) for a well produced at a constant flow rate in a
    homogeneous reservoir for the following initial condition, subject to the following initial and outer boundary
    conditions:
      - Dimensionless Initial and Boundary Conditions
        + Dimensionless Initial Condition (uniform pressure in reservoir)
+ Dimensionless Inner Boundary Condition (constant rate at the well)
+ Dimensionless Outer Boundary Conditions:
  a. Prescribed Flux at the Boundary
  b. Constant Pressure at the Boundary
— Particular Solutions in the Laplace Domain:
  + "Infinite-acting" reservoir behavior
  + Bounded circular reservoir — "no-flow" at the outer boundary
  + Bounded circular reservoir — "constant-pressure" at the outer boundary
  + Bounded circular reservoir — "prescribed flux" at the outer boundary

• Real Domain Solutions of the Radial Flow Diffusivity Equation for a Bounded Circular Reservoir:
  ■ Be able to derive the following particular solutions in the real domain from the appropriate Laplace transform solutions for an unfractured well produced at a constant flow rate in a homogeneous reservoir for the following outer boundary conditions:
    — "infinite-acting" reservoir behavior (line source solution)
    — Bounded circular reservoir — "no-flow" at the outer boundary and its "well testing" derivative function.
    — Bounded circular reservoir — "constant pressure" at the outer boundary and its "well testing" derivative function.

• Solutions for the Behavior of a Fractured Well in a Bounded Circular Reservoir: Infinite and Finite-Acting Reservoir Cases:
  ■ Be familiar with the concept of a well with a uniform flux or infinite conductivity vertical fracture in a homogeneous reservoir. Note that the uniform flux condition implies that the rate of fluid entering the fracture is constant at any point along the fracture. On the other hand, for the infinite conductivity case, we assume that there is no pressure drop in the fracture as fluid flows from the fracture tip to the well.
  ■ Be able to derive the real and Laplace domain (line source) solutions for a well with a uniform flux or infinite conductivity vertical fracture in a homogeneous reservoir.
    — General Result: (cfracs subscript means Continuous Fracture Source)
    — "Infinite-acting" reservoir behavior (line source solution)
    — Bounded circular reservoir — "no-flow" at the outer boundary
    — Bounded circular reservoir — "constant pressure" at the outer boundary

• Dual Porosity Reservoirs — Warren and Root Approach — Pseudosteady-State Matrix Behavior:
  ■ Be familiar with the "fracture" and "matrix" models developed by Warren and Root.
  ■ Be able to develop the Laplace and real domain results given by Warren and Root for pseudosteady-state matrix flow. These relations include:
    — Laplace domain results.
    — Line source solution in the real domain.
  ■ Be able to develop the Laplace and real domain results given by Warren and Root for pseudosteady-state matrix flow.

• Direct Solution of the Gas Diffusivity Equation Using Laplace Transform Methods:
  ■ Be familiar with the convolution form of a non-linear partial differential equation (with a non-linear right-hand-side term), as shown below.
  ■ Be able to develop the generalized Laplace domain formulation of the non-linear radial gas diffusivity equation using the $\beta(t)$ approach.
  ■ Be familiar with and be able to develop the $g(u)$ (non-linear) term.

• Convolution:
  ■ Be familiar with and be able to derive the convolution sums and integrals for the variable-rate and variable pressure drop cases.
    — Variable-Rate Case: (discrete and continuous rate change cases)
    — Variable-Pressure Drop Case: (discrete rate changes)
  ■ Be able to derive the general convolution identity in the Laplace domain from the integral form of the variable-rate convolution identity.
  ■ Be able to derive the real and Laplace domain identities for relating the constant pressure and constant rate cases: (from van Everdingen and Hurst)

• Concepts and Applications in Wellbore Storage Distortion:
  ■ Be familiar with and, based on physical principles, be able to derive the relations to model the phenomena of "wellbore storage." In particular, you should be able to derive the following:
    — General (Material Balance) Rate Relation
    — Pressure Relations (for small times/wellbore storage domination)
    — Laplace Domain Identity (valid for all times)

etc. — Other Topics under Consideration for work/discussion/study
• Multilayered Reservoir Solutions
• Dual Permeability Reservoir Solutions
• Horizontal Well Solutions
• Radial Composite Reservoir Solutions
• Various Models for Flow Impediment (Skin Factor)
• Flow Solutions for Analysis, Interpretation, and Prediction of Well Performance.
● Low Permeability/Heterogeneous Reservoir Behavior.
● Macro-Level Thermodynamics (e.g., Coupling PVT behavior with Flow Solutions).
● External Drive Mechanisms (Water Influx/Water Drive, Well Interference, etc.).
● Hydraulic Fracturing/Solutions for Fractured Well Behavior.
● Analytical/Numerical Solutions of Various Reservoir Flow Problems.
● Applied Reservoir Engineering Solutions — Material Balance, Flow Solutions, etc.

Instructor Information
Name Thomas A. BLASINGAME
Telephone number +1.979.845.2292
Email address t-blasingame@tamu.edu
Office hours TBD - Please send an email to make an appointment
Office location 821A RICH

Textbook and/or Resource Material

Grading Policies
1. Students are expected to attend class every session. Resident (not Distance Learning students) are REQUIRED to attend class every session. Distance Learning students are expected review lecture materials within 24 hours of the lecture being given. This is not a casual requirement, penalties can and will be assigned for missing class.

2. Policy on Grading
   a. All work in this course is graded on the basis of answers only — any partial credit is at the discretion of the instructor.
   b. All work requiring calculations shall be properly and completely documented for credit.
   c. All grading shall be done by the instructor, or under his direction and supervision, and the decision of the instructor is final.

3. Policy on Regrading
   a. Only in very rare cases will exams/assignments be considered for re-grading — partial credit (if any) is not subject to appeal.
   b. Work which, while possibly correct, but cannot be followed, will be considered incorrect.
   c. Grades assigned to homework problems will not be considered for regrading.
   d. If regrading is necessary, the student is to submit a letter to the instructor explaining the situation that requires consideration for regrading, the material to be regraded must be attached to this letter. The letter and attached material must be received within one week from the date returned by the instructor.

4. The grade for a late assignment is zero. Homework will be considered late if it is not turned in at the start of class on the due date. If a student comes to class after homework has been turned in and after class has begun, the student's homework will be considered late and given a grade of zero. Late or not, all assignments must be turned in. A course grade of Incomplete will be given if any assignment is missing, and this grade will be changed only after all required work has been submitted.

5. Each student should review the University Regulations concerning attendance, grades, and scholastic dishonesty. In particular, anyone caught cheating on an examination or collaborating on an assignment where collaboration is not specifically authorized by the instructor will be removed from the class roster and given an F (failure grade) in the course.

Grading Scale

<table>
<thead>
<tr>
<th>Grade Cutoffs (Percentages)</th>
<th>A: &gt; 90</th>
<th>B: 89.99 to 80</th>
<th>C: 79.99 to 70</th>
<th>D: 69.99 to 60</th>
<th>F: &lt; 59.99</th>
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<tr>
<td>Reading Portfolio</td>
<td>paper reviews for assigned publications</td>
<td>20 percent</td>
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<tr>
<td>Homework Portfolio</td>
<td>assigned problems from texts, journal articles, etc.</td>
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<td>Final Examination</td>
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<td>Total</td>
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<td>100 percent</td>
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</table>

Petroleum Engineering 620 — Fluid Flow in Petroleum Reservoirs
(Page 6 of 9)
Course Topics, Calendar of Activities, Major Assignment Dates

<table>
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<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Course Introduction (Review of Syllabus)</td>
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<tr>
<td>2</td>
<td>Review of Functions</td>
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<tr>
<td>3</td>
<td>Approximation of Functions</td>
</tr>
<tr>
<td>4</td>
<td>1st Order Ordinary Differential Equations</td>
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<tr>
<td>5</td>
<td>2nd Order Ordinary Differential Equations</td>
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<td>6</td>
<td>The Laplace Transform</td>
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<td>7</td>
<td>Introduction to Special Functions</td>
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<td>8</td>
<td>Porosity and Permeability Concepts</td>
</tr>
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<td>9</td>
<td>Correlation of Petrophysical Data</td>
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<tr>
<td>10</td>
<td>Development of Permeability/Darcy's Law</td>
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<tr>
<td>11</td>
<td>Capillary Pressure</td>
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<tr>
<td>12</td>
<td>Relative Permeability</td>
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<tr>
<td>13</td>
<td>Electrical Properties of Reservoir Rocks</td>
</tr>
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<td>14</td>
<td>Single-Phase, Steady-State Flow</td>
</tr>
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<td>15</td>
<td>Non-Laminar Flow in Porous Media</td>
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<tr>
<td>16</td>
<td>Material Balance Concepts</td>
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<tr>
<td>17</td>
<td>Pseudosteady-State Flow (Circular Reservoir)</td>
</tr>
<tr>
<td>18</td>
<td>Liquid Flow Diffusivity Equation</td>
</tr>
<tr>
<td>19</td>
<td>Gas Flow Diffusivity Equation</td>
</tr>
<tr>
<td>20</td>
<td>Multiphase Flow Diffusivity Equation</td>
</tr>
<tr>
<td>21</td>
<td>Dimensionless Variables/Radial Flow</td>
</tr>
<tr>
<td>22</td>
<td>Solutions — Radial Flow Diffusivity Equation</td>
</tr>
<tr>
<td>23</td>
<td>Solutions — Radial Flow Diffusivity Equation</td>
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<tr>
<td>24</td>
<td>Solutions — Linear Flow Diffusivity Equation</td>
</tr>
<tr>
<td>25</td>
<td>Solutions — Fractured Well (High FcD)</td>
</tr>
<tr>
<td>26</td>
<td>Solutions — Dual Porosity Reservoirs</td>
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<td></td>
<td>Thanksgiving Holiday (no class)</td>
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<tr>
<td>27</td>
<td>Direct Solution — Gas Diffusivity Equation</td>
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<td>28</td>
<td>Convolution</td>
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<tr>
<td>29</td>
<td>Wellbore Storage</td>
</tr>
<tr>
<td>30</td>
<td>Extra Class Period</td>
</tr>
</tbody>
</table>

Notes:
1. Specific due dates are given on the assignment packages. (Specifically the Reading Portfolio, the Homework Portfolio, and the Final Exam)
2. Any/all remaining assignments due. (http://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules)
3. Final grades due GRADUATING students. (http://registrar.tamu.edu/Catalogs,-Policies-Procedures/Academic-Calendar)
4. Final grades for ALL students Fall 2018 term (http://registrar.tamu.edu/Catalogs,-Policies-Procedures/Academic-Calendar)

Other Pertinent Course Information

Work Requirements: (layout/format/etc.)
- You must show ALL work — as appropriate, YOU MUST:
  - WORK: You must show ALL details in your calculations (no skipped steps).
  - UNITS: You must show ALL units in all calculations.
- Work layout: (as appropriate for a given problem)
  - NEATNESS: You will be graded on the neatness of your work.
  - LABELS: All work, trends, and features on every plot MUST be appropriately labeled (no exceptions).
    - Work: All work must be fully labeled and documented — equations, relations, calculations, etc.
    - Trends: This includes the slope, intercept, and the information used to construct a given trend.
    - Features: Any description of features/points of interest on a given trend (times, pressures, etc.).
  - LINES: Use appropriate drafting care in construction of lines, trends, arrows, etc.
  - SKETCHING: Take great care in any sketches you create/use in your work.
- Plots/Plotting: (as required)
  - SYMBOLS: Use symbols for "data" (e.g., reference solutions given as discrete data points).
  - LINES: Use lines to represent models.
COLORS: Use black for all axes and gridlines. Use primary colors (red, green, blue), avoid pastel colors.

etc.: Please do NOT use a border or "frame" around your plots.

Scholastic Dishonesty:

THE STUDENT IS HEREBY WARNED THAT ANY/ALL ACTS OF SCHOLASTIC DISHONESTY WILL RESULT IN AN "F" GRADE FOR ALL ASSIGNMENTS IN THIS COURSE. As a definition, "scholastic dishonesty" will include any or all of the following acts:

● Unauthorized collaborations — you are explicitly forbidden from working together.
● Using work of others — you are explicitly forbidden from using the work of others — "others" is defined as students in this course, as well as any other person. You are specifically required to perform your own work.

Work Standard:

Simply put, the expectation of the instructor (Blasingame) is that "perfection is the standard" — in other words, your work will be judged against a perfect standard. If your submission is not your very best work, then don't submit it. You have an OBLIGATION to submit only your very best work.

Student Obligation:

You must prepare your work as instructed above, or you will be assessed SEVERE grading penalties.

e-mail Protocols:

In order to manage your correspondence, I require that you use the following protocol.

Subject Line: [YYYYMMDD] (YOURLASTNAME) Subject
(date) (your last name) (Subject of your e-mail)

Body:

Dr. BLASINGAME:

I would like to enquire about the following:

* Question 1 ... (be clear and concise)
* Question 2 ... (be clear and concise)
* Question 3 ... (be clear and concise)

I thank you for your assistance.

YourFirstName YOURLASTNAME
(contact information)
E: (TAMU)
E: (personal)
T: (a phone contact) (I will NEVER call you without first sending an e-mail or text)

Comments:

● DO NOT FORWARD/REPLY TO EMAILS FROM ECAMPUS — SEND A NEW NOTE.
● The subject line is used to file e-mail (this is why this specific subject line is required).
● Every effort will be made to answer every e-mail, but PLEASE avoid trivial enquiries (consult the syllabus for "administrative" issues).
● I am more than happy to address questions by e-mail — i.e., issues/errors/etc. and/or need help with something relevant to the course.
● Courier New 10pt Bold font is required.

Computational Tools:

In this course you are NOT required to work in a particular computational environment. However, you should be/must be proficient at whatever computational tool(s) you use for work in this course. Example products/computational environments include:

● Visual Basic (VB) via MS Excel.
● MATLAB (http://www.mathworks.com/products/matlab/).
● Mathematica (https://www.wolfram.com/mathematica/).
● Programming Languages: C++, FORTRAN, Pascal, machine language, the Univac, an abacus, etc.

Please note that YOU are RESPONSIBLE for your computer-aided solutions. Depending on the assignment you may be asked for a copy of your source code and should provide relevant commentary/documentation in your source code sufficient for your work to be traced. You will also be asked for an outline/workflow for any/all computational solutions.
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. 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.”

Definitions of Academic Misconduct
1. CHEATING: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. FABRICATION: Making up data or results, and recording or reporting them; submitting fabricated documents.
3. FALSIFICATION: Manipulating research materials, equipment or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
4. MULTIPLE SUBMISSION: Submitting substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. PLAGIARISM: The appropriation of another person’s ideas, processes, results, or words without giving appropriate credit.
6. COMPLICITY: Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty.
7. ABUSE AND MISUSE OF ACCESS AND UNAUTHORIZED ACCESS: Students may not abuse or misuse computer access or gain unauthorized access to information in any academic exercise. See Student Rule 22: http://student-rules.tamu.edu/
8. VIOLATION OF DEPARTMENTAL OR COLLEGE RULES: Students may not violate any announced departmental or college rule relating to academic matters.
9. UNIVERSITY RULES ON RESEARCH: Students involved in conducting research and/or scholarly activities at Texas A&M University must also adhere to standards set forth in the University Rules.

For additional information please see:
http://student-rules.tamu.edu/.

Coursework Copyright Statement: (Texas A&M University Policy Statement)
The handouts used in this course are copyrighted. By "handouts," this means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy them, unless you are expressly granted permission.

As commonly defined, plagiarism consists of passing off as one’s own the ideas, words, writings, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions about plagiarism and/or copying, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."
Course Change Request

Date Submitted: 06/14/18 8:25 am

Viewing: PETE 630: Geostatistics

Last edit: 06/14/18 10:24 am

Changes proposed by: e-schuler

Catalog Pages referencing this course

Harold Vance Department of Petroleum Engineering
PETE - Petroleum Engineering

Faculty Senate Number

Name          E-mail                  Phone
Eleanor Schuler  e-schuler@tamu.edu   9798458402

Contact(s)

Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix       PETE
Course number       630

Department         Petroleum Engineering
College/School      College of Engineering
Academic Level     Graduate
Effective term     2018-2019

Catalog course description

Introductory and advanced concepts in geostatistics for petroleum reservoir characterization by integrating static
(cores/logs/seismic traces) and dynamic (flow/transport) data; variograms and spatial correlations; regionalized variables;
intrinsic random functions; kriging/cokriging; conditional simulation; non-Gaussian approaches.

Prerequisites and Restrictions

Introductory course in statistics or PETE 322.

Concurrent Enrollment

No

Should catalog prerequisites / concurrent enrollment be enforced?

No

Crosslistings

No

Stacked

No

Crosslisted With

Stacked with

In Workflow

1. PETE Department Head
2. Curricular Services Review
3. EN Committee Preparer GR
4. EN Committee Chair GR
5. EN College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 06/14/18 9:09 am
   Kathy Beladi (k-beladi): Approved for PETE Department Head
2. 06/14/18 10:32 am
   Terra Bissett (t.bissett): Approved for Curricular Services Review
3. 06/14/18 4:53 pm
   Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 06/28/18 5:36 pm
   Harry Hogan (h-hogan): Approved for EN Committee Chair GR
5. 06/28/18 5:37 pm
   Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 07/03/18 8:41 am
   LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 07/16/18 1:54 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
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<td>Lecture:</td>
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<td>Total</td>
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</table>

Repeatable for credit? | No |
Three-peat? | No |

CIP/Fund Code | 1425010006 |
Default Grade Mode | Letter Grade (G) |
Alternate Grade Modes | Satisfactory/Unsatisfactory |
Method of instruction | Lecture |

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) | Yes |

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Distance learning courses taught by the Department of Petroleum Engineering, provide the same lectures, assignments, and exams as on campus face-to-face courses. Student learning outcomes are evaluated by gradable assignments, which are distributed and collected through eCampus and exams are proctored by approved exam centers or equivalent.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

The credit hours of distance learning courses by the Department of Petroleum Engineering are ensured to be equivalent to on-campus face-to-face exams. In addition to the same lectures, DL students have equal opportunities to interact with instructors through email and online chat during office hours. For each three-credit hour course, a distance learning course accounts for 45-48 hours of instruction time.

Will this course be taught as a distance education course? | Yes No |
I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. | Yes No |
Is 100% of this course going to be taught in Texas? | Yes |
Will classroom space be needed for this course? | Yes |

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MEN-PETE) Master of Engineering in Petroleum Engineering</td>
</tr>
<tr>
<td>(MS-PETE) Master of Science in Petroleum Engineering</td>
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<tr>
<td>(PHD-PETE) Doctor of Philosophy in Petroleum Engineering</td>
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**Course Syllabus**

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload syllabus</td>
<td>Syllabus-PETE630_18C.pdf</td>
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<table>
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<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information</td>
<td></td>
</tr>
</tbody>
</table>

**Reviewer Comments**

Sandra Williams (sandra-williams) (04/04/18 12:00 pm): Rollback: You will need to include a traditional syllabus and a non-traditional syllabus (if applicable).
Course title and number  Geostatistics PETE 630
Term (e.g., Fall 200X)  Fall 2018
Meeting times and location  TR 2:20-3:35 PM  RICH 1009

Course Description and Prerequisites
This course covers introductory and advanced concepts in geostatistics for petroleum reservoir characterization by integrating static (cores/logs/seismic traces) and dynamic (flow/transport) data. Specific topics are: variograms and spatial correlations, regionalized variables, intrinsic random functions, kriging/cokriging, conditional simulation, non-Gaussian approaches (indicator methods/simulated annealing/genetic algorithms). Prerequisite is introductory course in statistics or instructor approval.

Learning Outcomes
The students will be able to utilize core, well logs, seismic data and geologic knowledge to build high resolution geomodels for flow simulation.

Instructor Information
Name  Akhil Datta-Gupta
Telephone number  9798479030
Email address  datta-gupta@tamu.edu
Office hours  TBD
Office location  RICH 401G

Textbook and/or Resource Material
No prescribed textbook. References and class notes will be provided.

Grading Policies
• Homworks and Assignments
  – Periodic class assignments (5%)
  – Home Works (15%)
• Projects
  – Midterm (30%)
  – Final (30%)
• Examinations
  – Final (20%)

Attendance and Make-up Policies
http://student-rules.tamu.edu/rule07

Overview & Objectives
Basic Review of Probability and Statistics
Distribution functions
Moments and Expectations
Covariance/correlation

**Spatial Interpolation of Properties**
Variogram and Variogram Modeling
Linear Regression
Kriging/Cokriging and Variations

**Stochastic Simulation**
Conditional Simulation
Sequential Simulation
Simulated Annealing
Uncertainty Assessment

**Data Correlation/Regression**
Multivariate Analysis (PCA, Cluster and Discriminant Analysis)
Data classification/partitioning
Parametric and Non-parametric Regression

**Integration of seismic and Well Data**
Scales and resolution
Sequential Simulation with Block Kriging
Bayesian Approaches
Geostatistical Inversion

**Modeling Facies Variations**
Lithofacies characterization
Object-based modeling
Indicator methods

**Advanced Concepts**
Multipoint Geostatistics
Markov Random Fields
Fractured Reservoir Characterization

**Flow Simulation in Geological Models**
Streamline techniques
Model ranking
Upscaling

**Dynamic Data Integration**
History Matching
Inverse Modeling Preliminaries

---

**Other Pertinent Course Information**

None

**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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Academic Integrity**
*For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*

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

Date Submitted: 06/19/18 3:55 pm

Viewing: PETE 635: Underbalanced and Managed Pressure Drilling

Last edit: 06/19/18 3:55 pm
Changes proposed by: e-schuler

Catalog Pages referencing this course:
- Harold Vance Department of Petroleum Engineering
- PETE - Petroleum Engineering

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eleanor Schuler</td>
<td><a href="mailto:e-schuler@tamu.edu">e-schuler@tamu.edu</a></td>
<td>9798458402</td>
</tr>
</tbody>
</table>

Rationale for Course Edit:
The proposed changes are part of a routine curriculum review.

Course prefix: PETE  
Course number: 635

Department: Petroleum Engineering
College/School: College of Engineering
Academic Level: Graduate
Effective term: 2018-2019

Complete Course Title:
Underbalanced and Managed Pressure Drilling

Abbreviated Course Title: UNDERBALANCED DRILLING

Catalog course description:
This course provides an introduction and application of techniques utilized in underbalanced and managed pressure drilling; includes equipment, types of drilling fluids used (air, mist foam, etc.), flow drilling, mud cap drilling and hydraulics calculations.

Prerequisites and Restrictions:
Graduate classification.

Should catalog prerequisites/concurrent enrollment be enforced?
No

Crosslistings:
No

Crosslisted With:

Stacked:
No

Stacked with:

Semester:
3

Contact Hour(s) (per week):
Lecture:
3  
Lab:
0  
Other:
0  
Total:
3

In Workflow:
1. PETE Department Head
2. Curricular Services Review
3. EN Committee Preparer GR
4. EN Committee Chair Chair GR
5. EN College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path:
1. 06/20/18 8:05 am Kathy Beladi (k-beladi): Approved for PETE Department Head
2. 06/20/18 8:27 am Terra Bisse (t.bisse): Approved for Curricular Services Review
3. 07/11/18 2:28 pm Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 07/24/18 4:48 pm Harry Hogan (h-hogan): Approved for EN Committee Chair Chair GR
5. 07/24/18 4:48 pm Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 07/25/18 4:12 pm LaRhesa Johnson (lrjohnson): Approved for GC Preparer
7. 07/25/18 4:12 pm LaRhesa Johnson (lrjohnson): Approved for GC Chair
Repeatable for credit? No
CIP/Fund Code 1425010006
Default Grade Mode Letter Grade (G)
Method of instruction Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes
Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.
Distance learning courses taught by the Department of Petroleum Engineering, provide the same lectures, assignments, and exams as on campus face-to-face courses. Student learning outcomes are evaluated by gradable assignments, which are distributed and collected through eCampus and exams are proctored by approved exam centers or equivalent.

Hours
Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.
The credit hours of distance learning courses by the Department of Petroleum Engineering are ensured to be equivalent to on-campus face-to-face exams. In addition to the same lectures, DL students have equal opportunities to interact with instructors through email and online chat during office hours. For each three-credit hour course, a distance learning course accounts for 45-48 hours of instruction time.

Will this course be taught as a distance education course? Yes No
I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes No
Is 100% of this course going to be taught in Texas? Yes
Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MEN-PETE) Master of Engineering in Petroleum Engineering</td>
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</tbody>
</table>

Course Syllabus

Syllabus: Upload syllabus
Upload syllabus PETE 635 Syllabus F 2018.pdf
<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
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</table>

**Reviewer Comments**

Sandra Williams (sandra-williams) (04/04/18 12:00 pm): Rollback: You will need to include a traditional syllabus and a non-traditional syllabus (if applicable).

Jennifer Veracruz (jveracruz) (04/10/18 2:43 pm): Rollback: Needs updated syllabus
Course title and number: PETE 635 Underbalanced and Managed Pressure Drilling
Term (e.g., Fall 200X): Fall 2018
Meeting times and location: Tuesday Thursday 11:10-12:25 Rich 311

Course Description and Prerequisites

Prerequisites: Graduate enrollment or approval of instructor

Description of Course: This course provides an introduction and application of techniques utilized in underbalanced and managed pressure drilling. Topics covered are equipment, types of drilling fluids used (air, mist foam, etc.), flow drilling, mud cap drilling and hydraulics calculations.

Learning Outcomes

The students will have a general idea of the Managed Pressure Drilling and Underbalanced Drilling Technologies available, when these technologies are applicable as well as which techniques are the best choice. They will also understand the engineering and planning for these technologies.

Instructor Information

Name: Jerome J. Schubert
Telephone number: 979-862-1195
Email address: jschubert@tamu.edu
Office hours: Tuesday Thursday 10:00-11:00 am or by appointment
Office location: Rich 501K

Textbook and/or Resource Material

Required Textbooks
“Managed Pressure Drilling,” Rehm, et.al., Gulf Publishing Company, Houston, 2008

References
“Mudlite Air/Mist/Foam Hydraulics Model”, Maurer Engineering Inc., Houston, 1988

Grading Policies
Exam A 25%
Exam B 25%
Homework 25%
Project 25%
A = 89.5 - 100%
B = 79.5 - 89.499...
C = 69.5 – 79.499...
D = 59.5 – 69.99…
F = 0 – 59.499…
Exams, Homework, and Project presentations will be submitted via ecampus.

Attendance and Make-up Policies

See Student Rule 7 [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07). Since all classes will be recorded and made available in ecampus, lectures can be made up by watching videos. If a student cannot submit homework or take exams at the scheduled time, the professor will work with the student given the student notifies the professor in advance.

Course Topics, Calendar of Activities, Major Assignment Dates

(14 weeks - 15th week is first week of finals. Include lab hours. Must include dates on which major exams will be given and assignments will be due and should not be changed without notification of all students in the course. **THIS INFORMATION HAS BEEN PLACED HERE FOR REFERENCE ONLY. PLEASE REMOVE BEFORE PREPARING SYLLABUS.**)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Course, Intro to Managed Pressure Drilling and Situational Problems</td>
<td>MPD Ch 1 &amp; 2, App A &amp; B</td>
</tr>
<tr>
<td>2</td>
<td>Constant BHP method as Primary Flow Measurement as Primary control</td>
<td>MPD Chapter 3, MPD Chapter 4</td>
</tr>
<tr>
<td>3</td>
<td>Continuous Circulation System Simplified Approach to MPD</td>
<td>MPD Chapter 5, MPD Chapter 6</td>
</tr>
<tr>
<td>4</td>
<td>MudCap Drilling Foam Cap Drilling MPD UBO Committee Meeting</td>
<td>MPD Chapter 7</td>
</tr>
<tr>
<td>5</td>
<td>ATC&amp;E No Classes</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dual Gradient Drilling</td>
<td>MPD Chapter 8</td>
</tr>
<tr>
<td>7</td>
<td>MPD Equipment MPD Candidate Selections</td>
<td>MPD Chapter 9, MPD Chapter 10</td>
</tr>
<tr>
<td>8</td>
<td>Exam A Introduction to Underbalanced Drilling Flow Drilling</td>
<td>UBD Chapter 1, UBD Chapter 2</td>
</tr>
<tr>
<td>9</td>
<td>Gaseated Fluids Foam Drilling</td>
<td>UBD Chapter 3, UBD Chapter 4</td>
</tr>
<tr>
<td>10</td>
<td>Foam Drilling Air and Gas Drilling</td>
<td>UBD Chapter 4, UBD Chapter 5</td>
</tr>
<tr>
<td>11</td>
<td>Snubbing and Underbalanced Drilling</td>
<td>UBD Chapter 6</td>
</tr>
</tbody>
</table>
The actual date of Exam A is flexible depending upon when we actually complete all the lessons on MPD and the exam schedules for other classes for the students.

The Course Project will be 10-15 minute power point presentation on ANY TOPIC RELATED TO Managed Pressure or Underbalanced Operations. On campus students will present live in class the last week of the semester classes and attendance is mandatory for on campus students. Distance Learning students will prepare their power point presentations and use the voice over option to record their oral presentations. All presentations will be submitted to exampus.

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity

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

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Course Change Request

Date Submitted: 04/18/18 11:06 am

Viewing: **PHPM 681: Seminar**

Last approved: 05/03/17 3:23 am

Changeedit: 04/19/18 11:04 am

Changes proposed by: monica-a-garza

In Workflow

1. PHPM Reviewer
2. PHPM Department Head
3. Curricular Services Review
4. PH Committee Preparer
5. PH Committee Chair
6. PH College Dean
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Monica Garner</td>
<td><a href="mailto:magarner@tamhsc.edu">magarner@tamhsc.edu</a></td>
<td>979-436-9483</td>
</tr>
<tr>
<td>Angel Mario Carrizales</td>
<td><a href="mailto:carri1214@tamu.edu">carri1214@tamu.edu</a></td>
<td></td>
</tr>
</tbody>
</table>

Rationale for Course

**Edit**

The proposed changes are part of a routine curriculum review.

Course prefix: **PHPM**

Course number: **681**

Department: **Health Policy & Management**

College/School: **Public Health**

Academic Level: **Graduate**

Academic Level (alternate): **Undergraduate**

Effective term: **2019-2020 2017-2018**

Complete Course Title: **Seminar**

Abbreviated Course Title: **SEMINAR ARCHITECTURE AND HEALTH SEM**

Catalog course description

Discussion and review of current practice in Health Policy architecture and Management environmental design and the role of the built environment in the production of health.

Prerequisites and Restrictions

Graduate classification or approval of instructor. Instructor approval.

Concurrent Enrollment: **No**

Should catalog prerequisites / concurrent enrollment be enforced?: **No**

Crosslistings: **No**

Crosslisted With

Approval Path

1. 04/18/18 11:07 am
   Monica Garner (monica-a-garza): Approved for PHPM Reviewer

2. 04/18/18 11:57 am
   Mike Morrisey (morrisey): Approved for PHPM Department Head

3. 04/19/18 11:04 am
   Sandra Williams (sandra-williams): Approved for Curricular Services Review

4. 04/19/18 6:36 pm
   Rick Danko (danko): Approved for PH Committee Preparer

5. 04/25/18 12:42 pm
   Szu-hsuan Lin (micheyszu): Approved for PH Committee Chair

6. 04/25/18 12:45 pm
   Jay Maddock (maddock): Approved for PH College Dean

7. 06/13/18 12:18 pm
   Meagan Kelly (meagankelly): Approved for GC Preparer

8. 07/20/18 4:27 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
This will be a required course or an elective course for the following programs:

**Required (select program)**

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<td>(MHA-HADM) Master of Health Administration in Health Administration</td>
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**Elective (select program)**

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<tbody>
<tr>
<td>(MPH-HPCH) Master of Public Health in Health Promotion and Community Health Sciences</td>
</tr>
<tr>
<td>(MPH-OCSH) Master of Public Health in Occupational Safety and Health</td>
</tr>
<tr>
<td>(MPH-PHEO) Master of Public Health in Environmental Health</td>
</tr>
<tr>
<td>(MPH-PHEB) Master of Public Health in Biostatistics</td>
</tr>
<tr>
<td>(MPH-PHEP) Master of Public Health in Epidemiology</td>
</tr>
<tr>
<td>(MPH-PHPM) Master of Public Health in Health Policy Management</td>
</tr>
<tr>
<td>(MPH-POPH) Master of Public Health in Population Health</td>
</tr>
<tr>
<td>(MS-ARCH) Master of Science in Architecture</td>
</tr>
<tr>
<td>(PHD-HRSA) Doctor of Philosophy in Health Services Research</td>
</tr>
<tr>
<td>(PHD-ARCH) Doctor of Philosophy in Architecture</td>
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# Course Syllabus

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<tr>
<td>Reviewer Comments</td>
<td></td>
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<tr>
<td>Szu-hsuan Lin (micheyszu) (04/16/18 4:30 pm):</td>
<td>1. Please edit the variable credit hours to allow registration for different hours. 2. Please provide a clear description of the course.</td>
</tr>
<tr>
<td>Szu-hsuan Lin (micheyszu) (04/16/18 4:31 pm):</td>
<td>Rollback: Edits are needed.</td>
</tr>
<tr>
<td>Szu-hsuan Lin (micheyszu) (04/25/18 12:42 pm):</td>
<td>SPH CC approved the course change</td>
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<tr>
<td>Reported to state?</td>
<td>No</td>
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</table>

Key: 17055
Course Change Request

Date Submitted: 05/16/18 11:00 am

Viewing: PLPA 603: Plant Disease Management

Last edit: 05/17/18 8:39 am
Changes proposed by: semurdock

Catalog Pages referencing this course
- Department of Plant Pathology and Microbiology
- PLPA - Plant Pathology

Faculty Senate Number

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Sam Murdock</td>
<td><a href="mailto:murdock@tamu.edu">murdock@tamu.edu</a></td>
<td>979-845-2388</td>
</tr>
</tbody>
</table>

Rationale for Course Change

The proposed changes are part of a routine curriculum review.

Course prefix PLPA  
Course number 603

Department Plant Pathology & Microbiology
College/School Agriculture & Life Sciences
Academic Level Graduate
Academic Level (alternate) Undergraduate
Effective term 2019-2020

Complete Course Title Plant Disease Management
Abbreviated Course Title PLANT DISEASE MANAGEMENT

Catalog course description
Online course designed to provide a strong foundation in the principles and practices of management of plant diseases; analysis of disease cycles and epidemiological parameters to develop and evaluate efficient control strategies and forecasting models.

Prerequisites and Restrictions
- PLPA 301, 301 or PLPA 601, or equivalent, approval of instructor.

Concurrent Enrollment No
Should catalog prerequisites / concurrent enrollment be enforced? No
Crosslistings No  
Crosslisted With

In Workflow
1. PLPM Reviewer
2. PLPM Department Head
3. Curricular Services Review
4. AG Committee Preparer GR
5. AG Committee Chair GR
6. AG College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path
1. 05/16/18 11:04 am  
   Won Bo Shim (wbshim): Approved for PLPM Reviewer
2. 05/16/18 11:09 am  
   Won Bo Shim (wbshim): Approved for PLPM Department Head
3. 05/17/18 8:41 am  
   Terra Bissett (t.bissett): Approved for Curricular Services Review
4. 05/17/18 10:08 am  
   Dawn Kerstetter (dkersteer): Approved for AG Committee Preparer GR
5. 05/17/18 10:09 am  
   Dawn Kerstetter (dkersteer): Approved for AG Committee Chair GR
6. 05/17/18 10:09 am  
   Dawn Kerstetter (dkersteer): Approved for AG College Dean GR
7. 06/13/18 12:18 pm  
   Meagan Kelly (meagankelly): Approved for GC Preparer
8. 07/20/18 4:27 pm  
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
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<tr>
<th>Stacked</th>
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<th>Stacked with</th>
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</table>

<table>
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<tr>
<th>Semester</th>
<th>3</th>
<th>Contact Hour(s)</th>
<th>Lecture: 3</th>
<th>Lab: 0</th>
<th>Other: 0</th>
<th>Total: 3</th>
</tr>
</thead>
</table>

Repeatable for credit? No
Three-peat? No
CIP/Fund Code 2603050002
Default Grade Mode Letter Grade (G)
Alternate Grade Modes Satisfactory/Unsatisfactory
Method of instruction Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes
Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.
The Learning Outcomes are met through a variety of content delivery and assessment approaches as outlined by the syllabus provided.

Hours
Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.
As indicated in the syllabus submitted, the activities for the course add to 135 hours based on realistic time it takes students to do each task.

Will this course be taught as a distance education course? Yes

I verify that I have reviewed the FAQ for Export Control Basics for Distance Education. Yes

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? No

This will be a required course or an elective course for the following programs:
Required (select program)
Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus syllabus PLPA603 2018_R.docx
<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information</td>
<td><strong>Course is offered as an online (599) section only (not 700 section and not &quot;in-person&quot;).</strong></td>
</tr>
<tr>
<td>Reviewer Comments</td>
<td></td>
</tr>
<tr>
<td>Reported to state?</td>
<td></td>
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</tbody>
</table>

Key: 13295
Instructor and Contact Information

Instructor: D.N. Appel, Professor, PLPM
Office: Rm 413 LF Peterson Bldg,
Office Phone: 979-845-8273
Skype: d-appel@tamu.edu
Email: appel@tamu.edu

My preferred method of communication is by email. For any questions, suggestions or concerns, send your message to appel@tamu.edu. Please identify PLPA603 in the subject line of all messages. I will also be communicating with you through the eCampus website. Even though communication will be primarily by email, students are welcome to call during normal office hours or to schedule a personal visit in my office.

Course Information

This is a distance education course designed to provide foundational subject matter in the principles and practices of plant disease management. You should have a grasp on the basics of plant pathology, or be willing to delve into a brand new discipline with all of the necessary terminology and technology. This is why I recommend you take PLPA 301 Introduction to Plant Pathology or its equivalent before taking PLPA 603.

Learning Objectives
You will be able to understand the array of approaches available to manage plant diseases and how to apply them, in principle, to the major diseases of a crop of your choosing. This crop will be the focus of your “case study” in disease management (described below). As a result, you will demonstrate the following competencies:

1. Comprehension of the underlying concepts of plant disease and pathogen types, disease cycles, and the influence of the environment on plant disease development.
2. Comprehension on the assessment of disease and the impact of plant diseases on crop production.
3. Understand the descriptions of plant diseases in terms of their signs and symptoms and learn the steps in solving diagnostic procedures in determining causes of disease.
4. Analyze a plant disease scenario and determine the proper application of all available disease management options.
Course Requirements

Lecture material will be presented via power point presentations and PDF files on eCampus. Each lecture will be available for viewing for one week. Questions from students and discussions should be submitted via the discussion board on the eCampus website. Students are expected to contact me immediately if there are any problems downloading files, or other essential communications. There will be a quiz distributed the Friday of each week covering the material in the lecture for the week. The quizzes will comprise 10% of the total grade.

The Exams (2 worth 20% each) will be based on lecture material that covers concepts of disease management and specific information based on the individual crop selected by each student.

Additionally, each student will be required to prepare their own PowerPoint presentation on disease management for their crop of interest (the “case study”). Your crop of interest can be identical to, or related to, the crop you are currently studying for your thesis/dissertation. However, it MUST be represented in the list of compendia published by the American Phytopathological Society as specified as your textbook (see below). The presentation (worth 40% of grade) must include a minimum of 25 slides that cover the specific topics of disease symptoms, pathogen biology, environmental influences, distribution of the pathogen, and management strategies. Sources of information used in the presentation must be cited. Please note that this presentation should be prepared as if the student is an Extension Specialist in plant pathology presenting an educational program to growers and crop consultants. This is not the same as a seminar presented to an academic audience.

Part of the grade (10%) is based on participation in online discussions. Students are encouraged to submit questions about lecture material or other relevant comments to the instructor on a weekly basis via the eCampus discussion board. The instructor will also be posing questions for student engagement in the material.

Required Textbook. Each student is required to select one APS plant disease diagnostic compendium as a specific reference for the crop of their choice. You will be able to select an individual crop for emphasis by selecting one of approximately 51 different publications covering a wide array of common field, fruit, ornamental, and vegetable crops. These reference materials can be purchased online from APS Press (http://my.apsnet.org/APSSStore/Category?Category=Compendium). As mentioned above, your crop can coincide with any you are currently working on or have worked on in the past.

Additional sources of information and reading assignments will come primarily from online sources and journals. The following list contains some of those readings. Others will be dictated by choice of crop and will be the responsibility of the student to find, according to instructions on subject matter. For example, during week two, the topic is the influence of environment on the development of the pathogen and the relevant disease. An article focusing on this topic should be found and reviewed. Each reading should be summarized in a 250 word critical analyses to demonstrate comprehension of the purpose and content of the assignment.

Week 2. (Research article – student choice). Student should locate a research article pertaining to the influence of the environment on a major disease of the case study topic.


Week 4. (Research article – student choice). Student should locate a research article pertaining to the relationship between disease incidence and severity and crop loss of the case study topic.


## Course Outline and Calendar (+ Activity Hours)*

<table>
<thead>
<tr>
<th>Week 1: Tuesday, May 29 – Sunday, June 3</th>
<th>Study Lecture</th>
<th>Reading</th>
<th>Case Study</th>
<th>Quiz Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture - Nature of Disease/Pathogens</td>
<td>4.5</td>
<td>4</td>
<td>1</td>
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<tr>
<td>Reading – Current state of Management</td>
<td>4</td>
<td>5</td>
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</tr>
<tr>
<td>Week 2: Monday, June 4 – Sunday, June 10</td>
<td>4.5</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Lecture - Disease and the Environment</td>
<td>4</td>
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<tr>
<td>Reading – Research impacts</td>
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<td>4</td>
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<tr>
<td>Week 3: Monday, June 11 – Sunday, June 17</td>
<td>4.5</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Lecture - Pathogen Dispersal and Disease Cycles</td>
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<tr>
<td>Reading – Research impacts</td>
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<td>Week 4: Monday, June 18 – Sunday, June 24</td>
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<tr>
<td>Lecture - Disease Diagnosis</td>
<td>4</td>
<td>4</td>
<td>1</td>
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<tr>
<td>Reading – Disease scenario</td>
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<tr>
<td>Week 5: Monday, June 25 – Sunday, July 1</td>
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<tr>
<td>Lecture - Disease Incidence/Severity and Yield Losses</td>
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<tr>
<td>Week 6: Tuesday, July 3 – Sunday, July 8</td>
<td>4.5</td>
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<tr>
<td>Lecture - Disease Management</td>
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<tr>
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<td>Week 7: Monday, July 9 – Sunday, July 15</td>
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<tr>
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<tr>
<td>Lecture - Protection and Therapy</td>
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<td>Week 9: Monday, July 23 – Sunday, July 29</td>
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<td>Reading - Resistance beyond breeding</td>
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<td>Week 10: Monday, July 30 – Sunday, Aug 5</td>
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<td>Lecture - Integrated Management</td>
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<td>Reading Advances in management</td>
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<td>Week 11: Tuesday, Aug 7 – Thursday, Aug 9</td>
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<td><strong>Presentations and Exam II (Final) Due</strong></td>
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<td><strong>Hours (45 lecture hrs + 90 activity hrs)</strong></td>
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</table>
Americans with Disabilities Act (ADA) Policy Statement
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Honesty
All students are expected to abide by The Aggie Honor System-Aggie Code of Honor (http://aggiehonor.tamu.edu/) that states, “An Aggie does not lie, cheat, or steal, or tolerate those who do.” This code applies to all exams, reports, and classroom activities. The instructor highly recommends that all students thoroughly review Information for Students (http://aggiehonor.tamu.edu/students/).
Course Change Request

Date Submitted: 04/09/18 2:08 pm

Viewing: **PLPA 607 : Pathogen Strategies**

Last edit: 04/25/18 10:57 am

Changes proposed by: semurdock

Catalog Pages referencing this course
- Department of Plant Pathology and Microbiology
- PLPA - Plant Pathology

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam Murdock</td>
<td><a href="mailto:murdock@tamu.edu">murdock@tamu.edu</a></td>
<td>979-845-2388</td>
</tr>
</tbody>
</table>

Rationale for Course

Edit

The proposed changes are part of a routine curriculum review.

Course prefix: PLPA
Course number: 607
Department: Plant Pathology & Microbiology
College/School: Agriculture & Life Sciences
Academic Level: Graduate
Effective term: 2018-2019

Complete Course Title:
Pathogen Strategies

Abbreviated Course Title:
PATHOGEN STRATEGIES

Catalog course description
Molecular mechanisms that pathogens use to overcome innate immunity of the host plant; molecular events associated with the disease cycles of pathogens; pathogen-host-coevolution; pathogen virulence factors; pathogen countermeasures to plant defense mechanisms.

Prerequisites and Restrictions
PLPA 301 or PLPA 601.

Should catalog prerequisites/concurrent enrollment be enforced?
Yes

In Workflow
1. PLPM Reviewer
2. PLPM Department Head
3. Curricular Services Review
4. AG Committee Preparer
5. AG Committee Chair GR
6. AG College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path
1. 04/09/18 2:59 pm
   Won Bo Shim (wbshim): Approved for PLPM Reviewer
2. 04/09/18 3:02 pm
   Won Bo Shim (wbshim): Approved for PLPM Department Head
3. 04/09/18 3:20 pm
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/09/18 3:33 pm
   Dawn Kerstetter (dkerstetter): Approved for AG Committee Preparer GR
5. 04/18/18 3:30 pm
   David W. Reed (dwreed): Rollback to PLPM Reviewer for AG Committee Chair GR
6. 04/19/18 4:02 pm
   Won Bo Shim (wbshim): Approved for PLPM Reviewer
7. 04/19/18 4:05 pm
   Won Bo Shim (wbshim): Approved for PLPM Department Head
8. 04/19/18 5:25 pm
   Sandra Williams (sandra-williams):
Enforced Prerequisites / Concurrent Enrollment

<table>
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<th>And/Or</th>
<th>Course Prefix/Number</th>
<th>Min Grade/Score</th>
<th>Academic Level</th>
<th>Concurrency?</th>
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<tr>
<td>And</td>
<td>PLPA 301</td>
<td>D</td>
<td>UG</td>
<td></td>
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<tr>
<td>Or</td>
<td>PLPA 601</td>
<td>D</td>
<td>GR</td>
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</tbody>
</table>

Crosslistings: No
Stacked: No
Concurrent Enrollment:
- PLPA 301: D, UG
- PLPA 601: D, GR

Semester: 1
Credit: 1
Contact Hour(s) (per week): Lecture: 1, Lab: 0, Other: 0, Total: 1

Repeatable for credit: No
CIP/Fund Code: 0111050005
Default Grade Mode: Letter Grade (G)
Method of instruction: Lecture

Approved for Curricular Services Review
9. 04/20/18 9:16 am
David W. Reed (dwreed): Rollback to PLPM Reviewer for AG Committee Preparer GR
10. 04/25/18 10:58 am
Won Bo Shim (wbshim): Approved for PLPM Reviewer
11. 04/25/18 11:00 am
Won Bo Shim (wbshim): Approved for PLPM Department Head
12. 04/25/18 1:54 pm
Sandra Williams (sandra-williams): Approved for Curricular Services Review
13. 04/25/18 1:56 pm
Dawn Kerstetter (dkerstetter): Approved for AG Committee Preparer GR
14. 04/25/18 1:59 pm
David W. Reed (dwreed): Approved for AG Committee Chair GR
15. 04/25/18 1:59 pm
David W. Reed (dwreed): Approved for AG College Dean GR
16. 06/13/18 12:18 pm
Meagan Kelly (meagankelly): Approved for GC Preparer
17. 07/20/18 4:27 pm
LaRhesa Johnson (lrjohnson): Approved for GC Chair
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)  
Yes

Learning Outcomes

**Meets traditional face-to-face learning outcomes.**

Describe how learning outcomes are met or provide justification why they are not met.

*Course module offered as part of term but maintains required learning outcomes in a compressed timeframe. See syllabus for details.*

Hours

**Meets traditional face-to-face hours.**

Describe how hours are met or provide justification why they are not met.

*Course module offered as part of term but maintains required contact hours. See syllabus for details.*

Will this course be taught as a distance education course?  
No

Is 100% of this course going to be taught in Texas?  
Yes

Will classroom space be needed for this course?  
Yes

This will be a required course or an elective course for the following programs:

- Required (select program)
- Elective (select program)

---

**Course Syllabus**

<table>
<thead>
<tr>
<th>Syllabus: Upload syllabus</th>
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<tbody>
<tr>
<td>Syllabus: Upload syllabus</td>
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<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
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<tbody>
<tr>
<td>Letters of support or other documentation</td>
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<th>Additional information</th>
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<table>
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<tr>
<th>Reviewer Comments</th>
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<td>Reviewer Comments</td>
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</tbody>
</table>

- **Dawn Kerstetter** ([dkerstetter](mailto:dkerstetter) [04/03/18 10:20 am]): Rollback: Syllabus needs corrections (see UCC/GC course submission checklist): ADA statement needs updated information; Calendar of activities is incomplete.
- **David W. Reed** ([dwreed](mailto:dwreed)) **(04/18/18 3:20 pm)**: Rollback: GPC approved pending additions to syllabus (non-traditional). Calendar of Activities needs to have a column with breakdown of class times and a column of how many hours.
- **David W. Reed** ([dwreed](mailto:dwreed)) **(04/20/18 9:16 am)**: Rollback: Dr. Shim—per GPC change request.
Course title and number: PLPA607 - Pathogen Strategies in Plant-Microbe Interactions.
Term: Fall 2018

Course Description and Prerequisites

Key molecular mechanisms that pathogens employ to overcome resistance mechanisms of the host plant; events associated with the disease cycles of pathogens; consideration of pathogen-host co-evolution, pathogen virulence factors, and pathogen countermeasures to plant defense mechanisms.

Prerequisites: Graduate student classification.

Course Objectives

Key Course Learning Outcomes
1. Students will master an understanding of key concepts in plant pathology, and demonstrate this by defining and defending concepts used by plant pathologists.
2. Students will be able to explain the main evolutionary mechanisms of host-pathogen co-evolution and give specific examples to illustrate these concepts.
3. Students use examples of topics in the course to illustrate concepts of offensive and defensive pathogen strategies.

Instructor Information

Name: Professor Daniel Ebbole
Telephone number: 5-4831
Email address: d-ebbole@tamu.edu
Office hours: By appointment
Office location: 321 Peterson

Textbook and/or Resource Material

Notes and reference materials provided by instructor.

Grading Policies

Grades will be based on a scale of <90% = A, 80-90 = B, 70-80 = C, 60-70 = D. >60 = F.

Classroom discussion and in-class or on-line quizzes will account for 40% of the grade. A class group project will account for 10% of the grade. An oral final exam (1 hour) will be schedule individually to account for 50% of the grade.

CLASS GROUP PROJECT: We will discuss a number of topics in the course, however, this will by no means exhaust the relevant topic material. During the course, the students as a group will choose a topic and, once approved by the instructor, will prepare a group presentation for that topic. Specific instructions for preparation of the presentation and the grading rubric will be presented during class.
## Course Topics, Calendar of Activities

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics for Lectures</th>
<th>Lecture hrs per week</th>
<th>Additional reading and assignments</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Terminology review, Disease cycle, disease control strategy</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Evolution of host-pathogen interactions</td>
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<tr>
<td>2</td>
<td>Host selective toxins - evolution of ToxA in wheat tan spot</td>
<td>3</td>
<td>6</td>
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<tr>
<td></td>
<td>ToxA function, TSN1 susceptibility gene of wheat</td>
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<tr>
<td>3</td>
<td>Detoxification and Tolerance of host defense anti-microbials</td>
<td>3</td>
<td>6</td>
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<td></td>
<td>Cell wall interface.</td>
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<td></td>
<td>Mid-term take home exam assigned</td>
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<tr>
<td>4</td>
<td>Manipulation of plant defense hormones by pathogens</td>
<td>3</td>
<td>6</td>
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<tr>
<td></td>
<td>RNA as virulence and defense factors</td>
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<tr>
<td>5</td>
<td>M. oryzae infection, host colonization, effectors and host adaptation</td>
<td>3</td>
<td>6</td>
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<tr>
<td></td>
<td>Schedule individual Oral Final Exams</td>
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</tbody>
</table>

**Total lecture hours and out of class activity hours**

| 15 hrs | 30 hrs |

### References for additional reading

**Week 1**

**Week 2**

**Week 3**

**Week 4**
- Koch et al. 2016. An RNAi based control of Fusarium graminearum infections through spraying long dsRNAs involves a plant passage and is controlled by the fungal silencing machinery. PLOS Pathogens DOI:10.1371/journal.ppat.1005901

**Week 5**
Attendance and Participation: See: http://student-rules.tamu.edu/rule07. It is expected that students be prepared for class and participate in the group discussion.

Make-Up Policy If an absence is excused, the instructor will either provide the student an opportunity to make up work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor.

Academic Integrity Statement
Aggie Honor Code "An Aggie does not lie, cheat, or steal or tolerate those who do." Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information, please visit: https://aggiehonor.tamu.edu/.

Plagiarism: https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules Plagiarism is defined as theft or inadequate citation of other work, including (but not limited to) primary and secondary literature and internet sources. Plagiarism will result in a grade of ‘zero’ for the assignment AND a deduction of the equivalent amount of points from your grade. For example, if plagiarism is discovered on an assignment worth 10 points, the assignment will be given -10 points as its score. Infractions will be reported to the Honor Code Office.

Disability Services
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.
Course Change Request

Date Submitted: 04/09/18 2:09 pm

Viewing: PLPA 608: Pathogen Perception and Signaling

Last edit: 04/25/18 10:58 am

Changes proposed by: semurdock

Catalog Pages referencing this course

Department of Plant Pathology and Microbiology
PLPA - Plant Pathology

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Sam Murdock</td>
<td><a href="mailto:murdock@tamu.edu">murdock@tamu.edu</a></td>
<td>979-845-2388</td>
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Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix: PLPA  Course number: 608

Department: Plant Pathology & Microbiology
College/School: Agriculture & Life Sciences
Academic Level: Graduate
Effective term: 2018-2019

Complete Course Title: Pathogen Perception and Signaling

Abbreviated Course Title: PATHOGEN PERCEPT & SIGNALNG

Catalog course description

Molecular and biochemical basis of pathogen recognition; pathogen signaling initiation and transduction in hosts.

Prerequisites and Restrictions

PLPA 301 or PLPA 601.

Should catalog prerequisites / concurrent enrollment be enforced?

Yes

Approval Path

1. 04/09/18 2:59 pm
   Won Bo Shim (wbshim): Approved for PLPM Reviewer

2. 04/09/18 3:03 pm
   Won Bo Shim (wbshim): Approved for PLPM Department Head

3. 04/09/18 3:20 pm
   Sandra Williams (sandra-williams): Approved for Curricular Services Review

4. 04/12/18 4:58 pm
   Dawn Kersteer (dkersteer): Approved for AG Committee Preparer GR

5. 04/12/18 5:00 pm
   David W. Reed (dwreed): Rollback to PLPM Reviewer for AG Committee Chair GR

6. 04/19/18 4:05 pm
   Won Bo Shim (wbshim): Approved for PLPM Reviewer

7. 04/19/18 4:05 pm
   Won Bo Shim (wbshim): Approved for PLPM Department Head

8. 04/19/18 5:25 pm
   Sandra Williams (sandra-williams):
Enforced Prerequisites / Concurrent Enrollment

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<th>Min Grade/Score</th>
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Crosslistings: No  Stacked: No

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Repeatable for credit: No  CIP/Fund Code: 0111050005  Default Grade Mode: Letter Grade (G)  Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)  Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Course module offered as part of term but maintains required learning outcomes in a compressed timeframe. See syllabus for details.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Course module offered as part of term but maintains required contact hours. See syllabus for details.

Will this course be taught as a distance education course?  No

Is 100% of this course going to be taught in Texas?  Yes

Will classroom space be needed for this course?  Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus  PLPA608_newversion.docx

Letters of support or other documentation  No

Additional information

Reviewer Comments  Dawn Kerstetter (dkerstetter) (04/03/18 10:22 am): Rollback: Syllabus corrections: ADA policy needs updated information; Need Attendance and Make-up Policies with student rule link

David W. Reed (dwreed) (04/18/18 3:20 pm): Rollback: GPC approved pending additions to syllabus (non-traditional). Calendar of Activities needs to have a column with breakdown of class times and a column of how many hours.

David W. Reed (dwreed) (04/20/18 9:17 am): Rollback: DR. Shim--per GPC change request
Course title: Pathogen Perception and Signaling
Course number: PLPA 608, 2017
Term: Fall, 2017
Meeting times: Monday/ Wednesday, 10:20-11:35am;
Meeting location: Borlaug Library or Conference Room 176
Institute for Plant Genomics and Biotechnology
Professor: Dr. Libo Shan
Office: Rm 136A, Norman E. Borlaug Center
Office Phone: 979-845-8818
Email: lshan@tamu.edu
Office hours: by appointment only

Course Description and Prerequisites

This course is designed to provide graduate students with most updated advance on the molecular and biochemical basis of pathogen recognition and signaling initiation/transduction in hosts.

Although there are no strict course requirements, a general knowledge of plant pathology, genetics, biochemistry and molecular biology is advised.

Learning Outcomes or Course Objectives

- Master principles and general concepts of nonself recognition and signaling mechanisms in host-microbe interaction.
- Define key molecular, biochemical, genetic and genomics concepts used in plant-microbe interaction.
- Comprehend the experimental approaches necessary for molecular plant-microbe interaction research.
- Develop comprehensive view of current status of molecular plant-microbe interaction.
- Develop a better understanding of the process of scientific inquiry
- Foster curiosity and critical thinking

Class Organization

The class meets on Mondays and Wednesdays from 10:20 AM until 11:35 AM. The course is composed of lectures and student discussions. Prior each class during the semester, papers/slides will be handed out electronically to the whole class and students are expected to read the papers before the lecture and be actively involved in the lecture discussion.
Class participation

Students will be expected not only to be well prepared for each class, but also, to participate in class discussion. All questions and points of view will be welcomed, and disagreement and respectful debate is expected. All students will be expected to follow University and classroom rules of conduct during class discussion.

Classroom rules

Rules of the classroom are available in the Texas A&M University student handbook. It is expected that students will abide by these rules. In addition, the following rules of the classroom apply:

- No use of electronic equipment (e.g., computers, iPODs, calculators) during class unless such use is employed for activities directly related to class.
- No mobile phone rings, etc. during class.
- Every point of view presented in class will be treated respectfully. Different opinions and lively discussions are encouraged. However, personal, inappropriate, or unprofessional conduct will not be allowed.

Instructor Information

Libo Shan
Professor
Department of Plant Pathology and Microbiology
Institute for Plant Genomics and Biotechnology
Norman E. Borlaug Center Room 136A
MS2123, Building 1513
Texas A&M University
College Station, TX 77843
Phone: 979-845-8818
Email: lshan@tamu.edu
Website: http://mpmi.tamu.edu/

Textbook and/or Resource Material

The course will be based on the recent literatures and there are no designated textbooks required. The instructor will correspond with students by email. All students must therefore have email access, and check for messages from the instructor periodically. The reading materials should be downloaded from the scientific journals or distributed to the class by email attachment.

Grading Policies

<table>
<thead>
<tr>
<th>Grading Policy</th>
<th>Exam 1</th>
<th>90%</th>
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<tbody>
<tr>
<td></td>
<td>(Comprehensive close-book exam on microbial sensing and signal transduction)</td>
<td></td>
</tr>
<tr>
<td>Class Participation</td>
<td></td>
<td>10%</td>
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<tr>
<td>Total</td>
<td></td>
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Grade Scale

<table>
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<tr>
<th>Grade Scale</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
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<tr>
<td>80-89%</td>
<td>B</td>
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</table>
Course Topics, Calendar of Activities, Major Assignment Dates

Class Schedule:

(Note: Detailed subject of each lecture is subjected to update with the most recent advance in host-microbe interaction research, including reading assignments)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics for Lectures</th>
<th>Lecture hrs per week</th>
<th>Additional reading and assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>• Introduction: Microbial sensing and non-self recognition • Elicitors, PAMPs and DAMPs</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>• Cell surface receptors and signaling • From effectors to genome editing</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>• Effectors and Receptors • Signaling in effector-triggered immunity</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>• Differences and similarities in plant and mammalian immunity</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>• Modulation of immune signaling by pathogens • Final Exam</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Total lecture hours and out of class activity hours</td>
<td>15 hrs</td>
<td>30 hrs</td>
</tr>
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</table>

Attendance and Participation: See: http://student-rules.tamu.edu/rule07. It is expected that students be prepared for class and participate in the group discussion.

Make-Up Policy If an absence is excused, the instructor will either provide the student an opportunity to make up work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor.

Academic Integrity Statement
Aggie Honor Code "An Aggie does not lie, cheat, or steal or tolerate those who do." Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information, please visit: https://aggiehonor.tamu.edu/.

Plagiarism: https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules Plagiarism is defined as theft or inadequate citation of other work, including (but not limited to) primary and secondary literature and internet sources. Plagiarism will result in a grade of ‘zero’ for the assignment AND a deduction of the equivalent amount of points from your grade. For example, if plagiarism is discovered on an assignment worth 10 points, the assignment will be given -10 points as its score. Infractions will be reported to the Honor Code Office.

Disability Services
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.
Course Change Request

Date Submitted: 04/09/18 2:09 pm

Viewing: PLPA 609 : Defense Hormone Signals

Last edit: 04/25/18 10:58 am
Changes proposed by: semurdock

Catalog Pages referencing this course
- Department of Plant Pathology and Microbiology
- PLPA - Plant Pathology

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Sam Murdock</td>
<td><a href="mailto:murdock@tamu.edu">murdock@tamu.edu</a></td>
<td>979-845-2388</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix: PLPA  
Course number: 609

Department: Plant Pathology & Microbiology
College/School: Agriculture & Life Sciences
Academic Level: Graduate
Effective term: 2018-2019

Complete Course Title: Defense Hormone Signals
Abbreviated Course Title: DEFENSE HORMONE SIGNALS

Catalog course description
Molecular and biochemical mechanisms of plant hormone-mediated defense responses to pathogen invasion; major classes of defense-related proteins, phytoalexins and antibacterial secondary metabolites and signal transduction pathways.

Prerequisites and Restrictions
PLPA 301 or PLPA 601.

Should catalog prerequisites / concurrent enrollment be enforced? Yes

In Workflow
1. PLPM Reviewer
2. PLPM Department Head
3. Curricular Services Review
4. AG Committee Preparer GR
5. AG Committee Chair GR
6. AG College Dean GR
7. GC Preparer
8. GC Chair
9. Faculty Senate Preparer
10. Faculty Senate
11. Provost II
12. President
13. Curricular Services
14. Banner

Approval Path
1. 04/09/18 2:59 pm
   Won Bo Shim (wbshim): Approved for PLPM Reviewer
2. 04/09/18 3:03 pm
   Won Bo Shim (wbshim): Approved for PLPM Department Head
3. 04/09/18 3:20 pm
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
4. 04/09/18 3:36 pm
   Dawn Kersteer (dkersteer): Approved for AG Committee Preparer GR
5. 04/18/18 3:21 pm
   David W. Reed (dwreed): Rollback to PLPM Reviewer for AG Committee Chair GR
6. 04/19/18 4:04 pm
   Won Bo Shim (wbshim): Approved for PLPM Reviewer
7. 04/19/18 4:05 pm
   Won Bo Shim (wbshim): Approved for PLPM Department Head
8. 04/19/18 5:25 pm
   Sandra Williams (sandra-williams):
Enforced Prerequisites / Concurrent Enrollment

<table>
<thead>
<tr>
<th>And/Or</th>
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<th>Course Prefix/Number</th>
<th>Min Grade/Score</th>
<th>Academic Level</th>
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<th>Concurrency?</th>
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<tr>
<td>Or</td>
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<td>PLPA 301</td>
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<tr>
<td>Or</td>
<td></td>
<td>PLPA 601</td>
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Crosslistings: No
Stacked: No

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<tr>
<th>Semester</th>
<th>Credit</th>
<th>Contact Hour(s) (per week):</th>
<th>Lecture:</th>
<th>Lab:</th>
<th>Other:</th>
<th>Total</th>
<th>1</th>
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Repeatable for credit? No
CIP/Fund Code: 0111050005
Default Grade Mode: Letter Grade (G)
Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Course module offered as part of term but maintains required learning outcomes in a compressed timeframe. See syllabus for details.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Course module offered as part of term but maintains required contact hours. See syllabus for details.

Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus

PLPA609_newversion.docx

Letters of support or other documentation

No

Additional information

Reviewer Comments

Dawn Kerstetter (dkerstetter) (04/03/18 10:26 am): Rollback: Syllabus corrections: ADA needs information updated; Attendance and Make up Policies needed with student rule link; calendar of activities is incomplete

David W. Reed (dwreed) (04/18/18 3:21 pm): Rollback: GPC approved pending additions to syllabus (non-traditional). Calendar of Activities needs to have a column with breakdown of class times and a column of how many hours.

David W. Reed (dwreed) (04/20/18 9:17 am): Rollback: DR. Shim--per GPC change request
Course title and number: Defense Hormone Signaling
Term: Fall, 2018
Meeting times and location: Monday/W 10:20-11:35, 308 L.F. Peterson Bldg
First class will be on November 1st, 2018

Course Description and Prerequisites
This course is designed to provide graduate students with most critical review of the most current literature on molecular and biochemical mechanisms of plant hormone-mediated defense responses to pathogen invasion; overview of major classes of defense-related proteins, phytoalexins and antibacterial secondary metabolites and signal-transduction pathways such as those mediated by reactive oxygen species (ROS), salicylic acid (SA), nitric oxide (NO), ethylene- and lipid-derived compounds such as jasmonic acid (JA).
A general knowledge of plant pathology, genetics, biochemistry and molecular biology is advised.

Learning Outcomes or Course Objectives
- Gain knowledge of pathogen induced biosynthesis of major defense hormones and signal transduction pathways regulated by specific hormones.
- Comprehend the concept and complexity and the cross-talk between defense hormones and the hormones involved in growth and development.
- Comprehend the experimental approaches necessary for molecular plant-microbe interaction research.
- Develop comprehensive view of current status of our knowledge of signaling events downstream of pathogen perception.
- Develop a better understanding of the process of scientific inquiry.

Class Organization
The class meets on Tuesdays and Thursdays from 9:35 until 10:50 AM. The course is composed of lectures and student discussions. The field of molecular and biochemical responses of plants to pathogens is very large and diverse and, furthermore, is very rapidly-changing. We will be learning these exciting new developments together as we discuss in a journal club-like format the most recent and breakthrough-caliber research papers. This is why, active discussion and participation of every student in class is highly encouraged and expected. Every topic covered in the class, will be preceded by an introduction lecture followed by a student presentation and discussions.

Class participation
Attendance is required for both the lectures/student presentations and discussions and for the laboratory exercise. In case of planned absences (such as participation in conferences and meetings), you have to notify the instructor ahead of the scheduled class session.
Instructor Information

Name: Mike Kolomiets  
Telephone number: 979-548-4624  
Email address: kolomiets@tamu.edu  
Office hours: By appointment only  
Office location: Rm 308, Peterson bldg.

Textbook and/or Resource Material

The course will be based on the recent literature and there are no designated textbooks required. The instructor will correspond with students by email.

Grading Policies

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Total 100%

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<td>70-79%</td>
<td>C</td>
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<td>60-69%</td>
<td>D</td>
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<tr>
<td>59 and below</td>
<td>F</td>
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Course Topics, Calendar of Activities, Major Assignment Dates

Class Schedule:

(Note: Detailed subject of each lecture is subjected to update with the most recent advance in host-microbe interaction research, including reading assignments)

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<th>Additional reading assignment hrs</th>
</tr>
</thead>
</table>
| 1    | - Overview of host biochemical defense  
      - Salicylic acid biosynthesis and signal transduction | 3 | 6 |
| 2    | - Reactive oxygen species and nitric oxide synthesis and signaling  
      - Lipid-mediated signaling | 3 | 6 |
| 3    | - Jasmonic acid biosynthesis and signal transduction  
      - Ethylene biosynthesis and signal transduction | 3 | 6 |
| 4    | - The growth hormones and their new roles in defense or pathogenicity  
      - Auxin, cytokinins, and gibberellic acid | 3 | 6 |
| 5    | - Cross-talk of defense hormones  
      - Final Exam | 3 | 6 |

Total lecture hours and out of class activity hours 15 hrs 30 hrs
Other Pertinent Course Information

**Attendance and Participation:** See: [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07). It is expected that students be prepared for class and participate in the group discussion.

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**Plagiarism:** [https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules](https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules) Plagiarism is defined as theft or inadequate citation of other work, including (but not limited to) primary and secondary literature and internet sources. Plagiarism will result in a grade of ‘zero’ for the assignment AND a deduction of the equivalent amount of points from your grade. For example, if plagiarism is discovered on an assignment worth 10 points, the assignment will be given -10 points as its score. Infractions will be reported to the Honor Code Office.

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