Graduate Council Report
March 4, 2010

New Course Requests

AERO 633. Advanced Aerospace Multibody Dynamics. (3-0). Credit 3. Techniques for modeling, simulation, and analyzing multibody dynamical systems; includes development of kinematic expressions for articulating bodies, adding and constraining degrees of freedom through mappings; familiarization with industry codes, such as DISCOS; appreciation of learned techniques on various systems, including omni-directional vehicles, Stewart platforms, and gyroscopically-stabilized walking robots. Prerequisite(s): AERO 622 or Graduate Classification and Approval of Instructor.

AERO 673. Boundary Layer Stability and Transition. (3-0). Credit 3. Analytical, numerical, and experimental methods for the stability of bounded shear flows; includes techniques for estimating transition to turbulence and the control of transition through laminar flow control. Prerequisite(s): Graduate classification and AERO 601, 602, or 603 or approval of instructor.

CPSY 635. Social Counseling Psychology Interface. (3-0). Credit 3. Provides a foundation in theory and research at the interface of social and counseling psychology, fundamentals of social psychology theories, methodologies and perspectives; understanding the relevance to counseling psychology practice; focus on social and cognitive theories, concepts, and processes rather than specific psychological disorders. Prerequisite(s): Doctoral student in good standing in Counseling, Clinical, School or Social Psychology.

CVEN 751. Advanced Dynamics and Control of Civil Engineering Structures. (3-0). Credit 3. Laplace transforms; nonlinear dynamics; base isolation; viscous dampers; classical control; state-space formulation; LQR controllers; estimator design; compensator design; advanced control techniques; emphasis on the issues and applications to bridges, buildings and other large civil structures. Prerequisite(s): CVEN 657, MEMA 647 or equivalent, or permission of the instructor.

ECEN 760. Introduction to Probabilistic Graphical Models. (3-0). Credit 3. Broad overview of various probabilistic graphical models, including Bayesian networks, Markov networks, conditional random fields, and factor graphs; relevant inference and learning algorithms, as well as their application in various science and engineering problems will be introduced throughout the course. Prerequisite(s): Undergraduate level probability theory. Basic programming skill in any programming language (C, C++, Python, Matlab, etc.

MEEN 656. Mechanical and Physical Properties of Thin Films. (3-0). Credit 3. Mechanical properties (hardness, stress, strain, delamination, fracture) of films; nanomechanical testing techniques; electrical properties of thin films; electrical properties measurement techniques, magnetic properties of films; magnetic properties measurement techniques; laboratory includes (1) thin film fabrication (sputtering, PVD); (2) nanomechanical testing; (3) electrical/magnetic measurement. Prerequisite(s): MEEN 222 or MSEN 601, or basic materials science background.

PETE 642. Formation Damage: Mechanisms and Remediation. (3-0). Credit 3. Identification and development of solutions for mechanisms of formation damage that can occur during drilling, completion, and following chemical treatments; includes interaction of cleaning fluids with the formation brines, rock and oil. Prerequisite(s): Graduate classification.
Graduate Council Report

March 4, 2010

PETE 643. Oil Field Chemistry. (3-0). Credit 3. The role of chemistry in well stimulation, water shut-off treatments, scale removal, mitigation, downhole corrosion issues, organic deposition, dementing, drilling fluids and various aspects of formation damage; includes problem identification as the first step in designing chemical treatment to remove formation damage. Prerequisite(s): Graduate classification.

PETE 644. CO2 Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR). (3-0). Credit 3. Understanding the need and potential of CO2 captures and uses, including sequestration and Enhanced Oil Recovery (CCS-EOR), the scientific, technological and economic aspects of identifying and implementing a CCS-EOR; overview of safety, environmental and legal aspects. Prerequisite(s): Graduate classification.

PETE 645. Upscaling of Geologic Models for Flow Simulation. (3-0). Credit 3. In-depth understanding of current approaches to upscaling of 3D geologic models for reservoir flow simulation; includes development of upscaling solvers. Prerequisite(s): Graduate classification.

PETE 646. Reservoir Characterization and Forecasting. (3-0). Credit 3. Emphasis on geostatistical estimation/simulation and advanced mathematical inversion methods; integration of three important aspects of reservoir development and management: i) stochastic reservoir description, ii) reservoir model updating; and iii) model-predictive reservoir control and management. Prerequisite(s): Graduate classification; basic familiarity with linear algebra, probability, statistics, differential and integral calculus and general reservoir engineering.

RPT 636. Philosophy of Social Research. (3-0). Credit 3. Overview of the history and development of the philosophy of social science; Relationships science; issues in social research; Sociology of Knowledge; related debates in various disciplines and fields of study. Prerequisite: PhD candidate.

STAT 645. Applied Biostatistics and Data Analysis. (3-0). Credit 3. Survey of crucial topics in biostatistics: application of regression in biostatistics; analysis of correlated data; logistic and Poisson regression for binary or count data; survival analysis for censored outcomes; design and analysis of clinical trials; sample size calculation by simulation; bootstrap techniques for assessing statistical significance; data analysis using R. Prerequisite(s): STAT 651, 652, and 659, or equivalent. Or prior approval by the instructor.

STAT 646. Statistical Bioinformatics. (3-0). Credit 3. An overview of relevant biological concepts and technologies of genomic/proteomic applications; methods to handle, visualize, analyze, and interpret genomic/proteomic data; exploratory data analysis for genomic/proteomic data; data preprocessing and normalization; hypotheses testing; classification and prediction techniques for using genomic/proteomic data to predict disease status. Prerequisite(s): STAT 604, 651, 652 or equivalent. Or prior approval by the instructor.
Course Change Request


Course Hours:
FROM: (3-0). Credit 3.
TO: (4-0). Credit 4.

Course Description:
FROM: Fluorescence techniques used by biological scientists in their research, evaluation of the literature in the field, pursuit of resources, interactions with colleagues and resulting from the extension and technological opportunities available through spectroscopy; introduces graduate students in pharmacology, toxicology, biochemistry, molecular biology, and other life sciences to these issues at an early stage in their careers; develops thinking skills to make informed judgments on applicability of fluorescence techniques, evaluating the literature and in presentations, and communicate their rationales to other scientists.

TO: Fluorescence spectroscopy and confocal/multiphoton microscopy in research; intro of pharmacology, life science, and physical science students to fluorophores, anisotropy, ligand binding, energy transfer, cytometry, lifetime imaging, correlation spectroscopy, immunocytochemistry, and image analysis with an emphasis on instrumental/sample artifacts, fluorescence application, literature evaluation, and communication of rationales to other scientists.
New Course Requests
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Aerospace Engineering

2. Course prefix, number and complete title of course: AERO 633 Advanced Aerospace Multibody Dynamics

3. Catalog course description (not to exceed 50 words): Techniques for modeling, simulation, and analyzing multibody dynamical systems; includes development of kinematic expressions for articulating bodies, adding and constraining degrees of freedom through mappings; familiarization with industry codes, such as DISCOS: appreciation of learned techniques on various systems, including omni-directional vehicles, Stewart platforms, and gyroscopically-stabilized walking robots.

4. Prerequisite(s): AERO 622 or Graduate Classification and Approval of Instructor

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

6. Is this a repeatable course? □ Yes □ No If yes, this course may be taken ______ times.

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

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

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

9. Prefix | Course # | Title (excluding punctuation) | Leet | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | HICE Code | Approval recommended by:
---|---|---|---|---|---|---|---|---|---|---
AERO | 633 | ADV AERO MULTIBODY DYN | | | | | | | | Dimitris C. Lagoudas (or Rodney D. Bowersox)-AE

Date

Department Head - Type Name & Sign

Department Head - Type Name & Sign (if cross-listed course)

Submitted to Coordinating Board by:

Assistant Director, Curricular Services

Robin Autenrieth
Chair, College Review Committee
Date

Dean of College
Date

Dean of College
 Date

Dean of College
David W. Reed
Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Course title and number  AERO 633 - Advanced Aerospace Multibody Dynamics
Term (e.g., Fall 200X)  Fall 2010
Credit Hours  3.0
Meeting times and location  TBA

Course Description and Prerequisites

Course will identify techniques for modeling, simulating, and analyzing multibody dynamical systems. Content will cover general topics, including developing kinematic expressions for articulating bodies, adding and constraining degrees of freedom through mappings, and becoming familiar with industry codes, like DISCOS. Techniques learned will be practiced on particular systems, like omni directional vehicles, stewart platforms, and gyroscopically-stabilized walking robots.

Learning Outcomes or Course Objectives

The learning outcomes are conveyed in the statements below.

1. The material in the prerequisite course (AERO 622) will help define the competency level of students coming into the course. This will be evaluated through some initial homework assignments and projects.
2. It is expected that students can work independently. Homework assignments and projects will be individual efforts.
3. Upon course completion, students will be able to model and simulate the motion of complex aircraft and spacecraft systems through the use of their own computer codes.
4. Upon course completion, students will be able to model and simulate the motion of complex aircraft and spacecraft systems through the use of industry computer codes.
5. The course material builds on material from the prerequisite course to advance the knowledge and practice of the students.

Instructor Information

Name  John E. Hurtado
Telephone number  979. 845.1659
Email address  jehurtado@tamu.edu
Office hours  TBD
Office location  706 HR Bright Building

Textbook and/or Resource Material

Course notes will be provided.
Grading Policies

Method of Evaluation:
Course presentations 20%
Course projects 80%
Total 100%

Grades: Grades are based on the weighted average following the schedule above.
A 90 – 100%
B 80 – 89%
C 70 – 79%
D 60 – 69%
F below 60%

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>kinematics and kinetics of articulating bodies</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>kinematics and kinetics of omni directional vehicles</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>stewart platform models</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>gyroscopic walking robots</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>efficient handling of constraint connections in multibody systems</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>adding and freezing degrees of freedoms in multibody systems</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>becoming familiar with industry multibody codes, like DISCOS</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>introduction to symbolic computations and OCEA computations</td>
<td></td>
</tr>
<tr>
<td>11-12</td>
<td>efficient use of quasi coordinates to help speed computations and simulations</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>efficient use of momentum variables</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>elements of impact dynamics, impulsive loads, and systems that gain and lose mass (e.g., jet damping)</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours 45

Other Pertinent Course Information

Students are expected to attend class. For additional information visit the student rules website on attendance: http://student-rules.tamu.edu/rule07.

Americans with Disabilities Act (ADA)

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

Academic Integrity

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

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

1. The request is submitted by the Department of Aerospace Engineering.

2. Course prefix, number and complete title of course: AERO 673 Boundary Layer Stability and Transition

3. Catalog course description (not to exceed 50 words): Analytical, numerical, and experimental methods for the stability of bounded shear flows: includes techniques for estimating transition to turbulence and the control of transition through laminar flow control.

4. Prerequisite(s): Graduate classification and AERO 601, 602, or 603 or approval of instructor

5. Is this a variable credit course? [ ] Yes [x] No
   If yes, from _______ to _______

6. Is this a repeatable course? [ ] Yes [x] No
   Will this course be repeated within the same semester? [ ] Yes [x] No
   If yes, this course may be taken ______ times.

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

M.S., Ph.D. in Aerospace Engineering or related fields

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

9. Prefix Course # Title (excluding punctuation) 
   AERO 673 BOUNDARY LAYER STAB TRANS
   Lecture Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code
   0 3 0 0 0 3 1 4 0 2 0 1 0 0 6 0 1 0 0 1 0 - 1 1 0 0 3 6 3 2

   Approval recommended by: [Signature] Dimitris C. Lagoudas or Rodney D. Bowensox-AE
   Department Head - Type Name & Sign Date

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

   Submitted to Coordinating Board by:
   [Signature] Associate Director, Curricular Services

   [Signature] Robi'n Autenrieth
   Chair, College Review Committee 2-16-10
   Date

   [Signature] Dean of College
   Date

   [Signature] Dean of College
   Date

   [Signature] David W. Reed 4 March 2010
   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu
Curricular Services – 3/09
Course title and number
AERO 673 Boundary Layer Stability and Transition
Term (e.g., Fall 200X)
Fall 2010
Meeting times and location
TBA

Course Description and Prerequisites
The analytical, numerical, and experimental methods for the stability of bounded shear flows are reviewed. Techniques for estimating transition to turbulence are presented. The control of transition though laminar flow control is covered throughout the course.
Prerequisites: Graduate classification, AERO 601, 602, 603 or approval of instructor.

Learning Outcomes or Course Objectives
Enable students to do critical analysis of literature in the area of laminar-turbulent transition, make engineering judgments on importance of transition in selected problems, form a basis for continuing research; establish a firm foundation in mathematical techniques of stability analysis and the vital role of stability analysis in transition; analytical, computational, and experimental techniques for aspects of stability and transition to turbulence of bounded shear layers; subsonic and supersonic basic states; techniques of laminar flow control.

Instructor Information
Name
William S. Saric
Telephone number
979.862.1749
Email address
saric@tamu.edu
Office hours
TBA
Office location
HRBB 602C

Textbook and/or Resource Material
Course notes will be provided by the instructor

Grading Policies
Method of Evaluation:
Mid-term exam 30%
Final exam 30%
Homework and project (soln of the O-S Eqn.) 40%
Total 100%
Grades: Grades are based on the weighted average following the schedule above.

A 90 – 100%
B 80 – 89%
C 70 – 79%
D 60 – 69%
F below 60%

There will be weekly homework problems assigned. You are expected to work these. Not all the problems will be graded. Some homework exercises require team effort. Homework turned in late will be assigned a late penalty; late penalty does not apply to university excused absences.

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading from notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mathematical background</td>
<td>Volume I, Chapter 1</td>
</tr>
<tr>
<td>2</td>
<td>Superposed Fluids (Rayleigh-Taylor)</td>
<td>I, 2</td>
</tr>
<tr>
<td>3</td>
<td>Fluids Heated from Below (Bénard convection)</td>
<td>I, 4</td>
</tr>
<tr>
<td>4</td>
<td>Inviscid-shear-layer instability (Rayleigh criterion)</td>
<td>Volume II, Chapter 2, 3</td>
</tr>
<tr>
<td>5, 6</td>
<td>The role of viscosity and the O-S Equation (T-S waves)</td>
<td>II, 3</td>
</tr>
<tr>
<td>7</td>
<td>Transition correlations (Smith-van Ingen method)</td>
<td>II, 3</td>
</tr>
<tr>
<td>8</td>
<td>Experimental methods</td>
<td>II, 4</td>
</tr>
<tr>
<td>9</td>
<td>Three-dimensional boundary layers (crossflow mechanisms)</td>
<td>II, 5</td>
</tr>
<tr>
<td>10</td>
<td>Effects of compressibility</td>
<td>II, 6</td>
</tr>
<tr>
<td>11</td>
<td>High Mach number flows (Mack modes)</td>
<td>II, 6</td>
</tr>
<tr>
<td>12</td>
<td>Transient Growth (non-orthogonal modes)</td>
<td>II, 7</td>
</tr>
<tr>
<td>13</td>
<td>Rotational effects (Görtler instability)</td>
<td>II, 8</td>
</tr>
<tr>
<td>14</td>
<td>Numerical Methods</td>
<td>II, 9</td>
</tr>
<tr>
<td>15</td>
<td>Transition Control</td>
<td>II, 10</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Students are expected to attend class. For additional information visit the student rules website on attendance: [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).

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Academic Integrity

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

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

1. This request is submitted by the Department of ________________
   Department of Educational Psychology

2. Course prefix, number and complete title of course: ________________
   CPSY 635 - Social Counseling Psychology Interface

3. Course description (not to exceed 50 words): ________________
   Provides a foundation in theory and research at the interface of social and counseling
   psychology; fundamentals of social psychology theories, methodologies and perspectives; understanding the relevance to counseling
   psychology practice; focus on social and cognitive theories, concepts, and processes rather than specific psychological disorders.

4. Prerequisite(s): ________________
   Doctoral student in good standing in Counseling, Clinical, School or Social Psychology
   Cross-listed with: ________________
   Cross-listed courses require the signature of both department heads.

5. Is this a variable credit course? ________________
   Yes ☐  No ☒ If yes, from ________ to ________

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

7. Has this course been taught as a 489/689? ________________
   Yes ☒  No ☐ If yes, how many times? ________
   Indicate the number of students enrolled for each academic period it was taught. ________________
   Spring 2010

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

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

10. Prefix   Course #   Title (excluding punctuation)   Lect   Lab   SCH   CIP and Fund Code   Admin. Unit   Acad. Year   FICE Code
    CPSY 635 SOCIAL - COUNSELING INTER

    Approval recommended by: ________________
    Chair, College Review Committee Date
    Dean of College Date

    Head of Department Date
    Head of Department (if cross-listed course) Date

    Submitted to Coordinating Board by: ________________
    Date
    Effective Date
    Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 10/08
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of ____________________________
   Department of Educational Psychology

2. Course prefix, number and complete title of course: CPSY 635 - Social Counseling Psychology Interface

3. Course description (not to exceed 50 words): Provides a foundation in theory and research at the interface of social and counseling psychology; fundamentals of social psychology theories, methodologies and perspectives; understanding the relevance to counseling psychology practice; focus on social and cognitive theories, concepts, and processes rather than specific psychological disorders.

4. Prerequisite(s): Graduate Classification and instructor approval
   Cross-listed with: 

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

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

7. Has this course been taught as a 489/689? □ Yes □ No If yes, how many times? __1__
   Indicate the number of students enrolled for each academic period it was taught. Spring 2010

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

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

10. Prefix: CPSY 635 Title (excluding punctuation): Social Counseling Psychology Interface
    Lec Lab Sem CIP and Fund Code Admin Unit Acad Year HICE Code
    03000034206010001092010110003632
    Approval recommended by: 
    Head of Department: Victor Willson Date: 11/29/09
    Head of Department (if cross-listed course) Date: 
    Submitted to Coordinating Board by: 
    Associate Director, Curricular Services Date: 
    Effective Date: 

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 10/08
PROFESSIONAL SEMINAR
Social-Counseling Psychology Interface
CPSY 635
Spring 2010

Timothy R. Elliott, Ph.D.
Professor
713 Harrington
Office hours by appointment
telliott@tamu.edu

Room: Harrington 717
Class Time: Wednesday, 5:00 PM – 8 PM

I. Course Overview and Goals

The course will provide students with a foundation in theory and research at the interface of social and counseling psychology. Students will obtain a basic, fundamental grasp of social psychology theories, methodologies and perspectives and understand their relevance to counseling psychology practice and research. The course is organized around social and cognitive theories, concepts, and processes rather than specific psychological disorders because it is from such general theories, concepts, and processes that effective tools for assessment and intervention are most likely to be developed.

II. Required Readings

Required readings are designated in the course outline (▷). No text is required for this course. Supplemental readings are required of co-leaders. All readings will be provided via the Howdy email system. Registered students will receive all readings via email.

III. Course Requirements

1. **Class attendance is expected.** You and your peers will benefit from regular attendance and cooperation. According to APA policy, your behavior in graduate school requires ethical behavior as set forth in the APA standards. This includes your classroom behavior.
2. **Keep up with assigned readings.** Classroom discussion will depend on it. Your learning will be enriched by it. You are expected to read assigned articles prior to class and be prepared to discuss the material in class. Readings will be provided to you by the instructor via the Howdy (TAMU) electronic
system. On occasion, I will hand out additional figures, readings, etc., that will be informative. Notes that I present on the board will also be informative.

III. Grading Policy

You will be graded on the following:

Class participation 25%
(including class discussion, co-leading)
Written Summaries (a total of 12 essays) 25%
Take Home Final Examination 50%

Grades for the course will be assigned as follows: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, 0-59 = F.

DEFINITIONS and ACTIVITIES

A. CLASS PARTICIPATION. This course is a doctoral seminar in which active participation is expected of everyone. In order to be an active participant, you need to read the assigned material, understand most of what you have read, and be prepared with comments and questions, including questions about aspects of the reading that you may not have understood. Understanding that some people are more comfortable than others speaking up in group settings, I will do my best to make the class a safe place for asking questions and offering opinions. Although I concede at times I can be a bit challenging, be assured that I want to know what you are learning and thinking about the assigned content and if you are integrating the material; I can be easily impressed if you have read the assigned material, have given it some thought, and you are game to present and discuss those thoughts. This is how a "pro-sem" should operate.

B. WEEKLY ESSAYS. Beginning with the class session on February 10th, you will write a brief (one page) essay describing how the concepts or theories from that week's reading might be used to help you (1) understand your work with a client, (2) further develop your research ideas, and/or (3) gain a new perspective on your service activities. (By "service activities," I mean professional activities such as policy initiatives, consulting, organizational work, societal and community activities). You can focus on one or several domains in any given week, and aim for significant attention to each over the semester. These essays should be emailed to me by 4:00 p.m. Tuesday. These will not be graded but be prepared to discuss them in class. The last essay is due on April 27th.

C. DISCUSSION CO-LEADERS. Each student will either volunteer or be assigned to be a co-leader of one class session. As co-leader, the student will read the supplemental material for the assigned session, and develop set of at least five discussion points related to the broad themes of the reading. Discussion points should be implications raised by the material that suggest controversy, creative connections to other issues, research potential,
or clinical application of the material. All students should be prepared to raise any of their discussion points, but the onus for keeping the discussion going falls on the discussion co-leader and the professor.

D. TAKE-HOME FINAL EXAMINATION. A final take-home examination will be provided at the final class session on April 28th. The examination will likely require each student to demonstrate the ways in which the field of social psychology (including social cognition, self and identity, and personality) can inform the following:

- **Clinical Practice** – Including interventions, assessment, consultation, and services, generally.

- **Research** – concerning any psychological topic, broadly defined, relevant to professional psychology.

- **Service Activities** - broadly defined to include administration, policy development, committee work, leadership positions, etc.

The final examination will permit you to demonstrate your appreciation and facility with theoretical approaches to the practice and research often associated with counseling psychology.

IV. Course Outline

January 20
Overview of the course and syllabus. History of the social-clinical interface, and social psychological perspectives, and areas of overlap with psychological practice. Defining major domains, major events, and major figures in social psychology. Using, conceptualizing and understanding theory, the literature base, and HARK.


► Kowalski, R., & Leary, M. (1999). Interfaces of social and clinical psychology: Where we have been, where we are. In R. M. Kowalski & M. R. Leary (Eds.). *The social psychology of emotional and behavioral problems.* (pp. 7-33).

January 27

Supplemental:

113-119.

February 3
Cognitive dissonance; behavior justification, consistency and congruence as motivational factors.

1st Essay due.


February 10
Understanding social influence, attitudes and persuasion in counseling; the Elaboration Likelihood
Model of persuasion. Contemporary applications in psychoeducational groups in health care settings and
health promotion, generally. 2nd Essay due.

basic research to counseling psychology. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling

Supplemental:
and persuasion in psychotherapy and counseling. In J. E. Maddux & J.P. Tangney (Eds.) *Social

February 17
Attributional activity in adjustment, fundamental attribution error, self-blame processes. 3rd
Essay due.

clinical psychology. In R. M. Kowalski & M. R. Leary (Eds.). *The social psychology of emotional
and behavioral problems* (pp. 37-67).

Supplemental: Frazier, P. (2000). The role of attributions and perceived control in recovery from rape. *Journal of Personal and
Interpersonal Loss, 5*, 203–225.

Wang, K., Baron, L., & Hehl, M. (in press). Making the blind look best: Effects of visual resume formatting on ratings of
job applicants with blindness. *Rehabilitation Psychology*.

February 24
Social learning and why self-efficacy is everywhere (especially health and career development). 4th
Essay due.

1-26.

Assessment, 14*, 161-178.
March 3
James Pennebaker: Health; writing, talking, self-disclosure, and the impact of a career. 5th
Essay due.
http://homepage.psy.utexas.edu/homepage/Faculty/Pennebaker/Home2000/JWPhome.htm


March 10
Reality Negotiation (from Barnum effects to excuse-making and hope) and the contributions of C. R.
Snyder; positive illusions and making meaning. 6th Essay due.

Clinical Psychology, 8, 130–157.


March 24
Appraisal and coping and Richard Lazarus. Trait versus state in appraisal and coping. Trajectories of
adjustment and resilience. 7th Essay due.


Supplemental: Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive

March 31
Self-Regulation and the work of Roy Baumeister (is it really like a muscle?) 8th Essay due.
http://www.psy.fsu.edu/~baumeistertice/index.html

interventions increase regulatory success, and how depletion moderates the effects of traits on
behavior. Journal of Personality, 74, 1773-1801.


April 7
Interpersonal attraction, Liking, Relationships. 9th Essay due.

(pp. 143-177). Needham Heights, MA: Allyn & Bacon.

Supplemental: Baumeister, R., Brewer, L., Tice, D., & Twinge, J. (2007). Thwarting the need to belong: Understanding the
interpersonal and inner effects of social exclusion. Social and Personality Psychology Compass, 1, 506-520.
April 14


NOTE: The students enrolled who took my Introduction to Group class in 2008 will teach this session.

April 21


April 28

Take home final examination distributed at the end of class.


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, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity Statement and Policy
“An Apple does not lie, cheat or steal, or tolerate those who do.” For additional information, please visit: http://www.tamu.edu/aggichonor

Students with special needs: Any student who could require assistance in the event of a necessary evacuation of the building in which this class is taught are asked to notify the instructor so that individuals can be identified to assist him/her during an examination.
November 24, 2009

MEMORANDUM

TO: Graduate Instruction Committee, SEHD

THROUGH: Jim Kracht, PhD
Associate Dean for Academic Affairs

FROM: Victor Willson, PhD
Professor and Head

SUBJECT: New Course: CPSY 635 – Social Counseling Psychology Interface

Attached please find the appropriate paperwork for the establishing of a new course, CPSY 635, in the Department of Educational Psychology.

Pursuant to the directives of the College, the following information is provided:

1. Rationale: The course will provide students with a foundation in theory and research at the interface of social and counseling psychology. Students will obtain a basic, fundamental grasp of social psychology theories, methodologies and perspectives and understand their relevance to counseling psychology practice and research. The course is organized around social and cognitive theories, concepts, and processes rather than specific psychological disorders because it is from such general theories, concepts, and processes that effective tools for assessment and intervention are most likely to be developed.

2. Vote by the Program: This course is being offered as a graduate course so that the appropriate subvention is received for it. It has the unanimous support of our department.

We appreciate your consideration of this course. Please contact us should you require additional information.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Civil Engineering

2. Course prefix, number and complete title of course: CVEN 751 Advanced Dynamics and Control of Civil Engineering Structures

3. Catalog course description (not to exceed 50 words): Laplace transforms; nonlinear dynamics; base isolation; viscous dampers; classical control; state-space formulation; LQR controllers; estimator design; compensator design; advanced control techniques; emphasis on the issues and applications to bridges, buildings and other large civil structures.

4. Prerequisite(s): CVEN 657, MEMA 647 or equivalent, or permission of the instructor

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

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

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

   M.E., M.S., and Ph.D. in civil engineering

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

9. Prefix Course # Title (excluding punctuation)
   CVEN 751 ADV DYN AMIES & CTRL STRUCT

   Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code
   0 3 0 3 1 4 0 8 0 1 0 0 0 6 0 6 3 0 1 0 - 1 1 0 0 3 6 3 2
   Approval recommended by:

   Department Head - Type Name & Sign Date
   Chair, College Review Committee Date
   Dean of College Date

   Department Head - Type Name & Sign (if cross-listed course) Date
   Dean of College Date

   Submitted to Coordinating Board by:

   Associate Director, Curricular Services Date Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
Curricular Services – 3/09
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted by the Department of

Civil Engineering

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

CVEN 751 Advanced Dynamics and Control of Civil Engineering Structures

3. Catalog course description (not to exceed 50 words):

Laplace transforms; nonlinear dynamics; base isolation; viscous dampers; classical control; state-space formulation; LQR controllers; estimator design; compensator design; advanced control techniques; emphasis on the issues and applications to bridges, buildings and other large civil structures.

4. Prerequisite(s):

CVEN 657, MEMA 649 or equivalent, or permission of the instructor

5. Is this a variable credit course? □ Yes   ☑ No

If yes, from ______ to ______

6. Is this a repeatable course? □ Yes   ☑ No

If yes, this course may be taken ______ times.

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

7. This course will be:

a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.E., M.S., and Ph.D. in civil engineering

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

Attach approval letters.

9. Prefix Course # Title (excluding punctuation)

CVEN 751 ADV DYNAMIES & CTRL STRUCT

Lect Lab SCH CIP and Fund Code Admin Unit Acad Year FTE Code

0 3 0 0 3 1 4 0 8 0 1 0 0 0 6 0 6 3 0 1 0 - 1 1 0 0 3 R 3 2

Approval recommended by:

Mark Burris

Department Head - Type Name & Sign Date

Mark Burris

Department Head - Type Name & Sign Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Robin Autenrieth

Chair, College Review Committee Date

Robin Autenrieth

Dean of College Date

David W. Reed

Dean of College Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/09
Course title and number  CVEN 751: Advanced Dynamics and Control of Civil Engineering Structures
Term  Fall 2010
Meeting times & location  TBA

Course Description and Prerequisites

Laplace transforms; nonlinear dynamics; base isolation; viscous dampers; classical control; state-space formulation; LQR controllers; estimator design; compensator design; advanced control techniques; emphasis on the issues and applications to bridges, buildings and other large civil structures.

Pre-requisites: CVEN 657, MEMA 647 or equivalent, or permission of the instructor

Course Goals

After taking this course students should be able to:
1. Understand fundamental concepts of classical and state-space control of structures
2. Formulate an analysis and generate code for block-oriented control systems with filters and observers
3. Grasp the basic principles involved in introduction of supplemental passive and active damping of large civil engineering structures
4. Appreciate contributions of researchers throughout the world to intelligent structural design as described in archival journals and recent textbooks
5. Demonstrate an ability to apply principles covered in the course to a civil engineering project of special interest

Instructor Information

Name  Dr. Luciana R. Barroso
Telephone number  979-845-0290
Email address  lbarroso@civil.tamu.edu
Office hours  To Be Announced
Office location  CE/TTI Building, Rm. 705-E

Textbook and/or Resource Material


Other software-related tools will include the following:
1. Matlab, Simulink, and several toolboxes
2. TAMU Supercomputing Facility

In addition, the students will be required to incorporate material from various engineering journals as appropriate.
Grading Policies

Final grades will be based upon the overall average to be determined as follows:

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class activities, RATs, Attendance/Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Individual assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Project</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

where: \( A \geq 90; \quad 90 > B \geq 80; \quad 80 > C \geq 70; \quad 70 > D \geq 60; \quad 60 > F \).

Course Topics, Calendar of Activities, Major Assignment Dates

- **Week 1:** Introduction, Laplace transforms and Block Diagrams
- **Week 2:** Block Diagrams, Poles and Zeros, State-Space formulation
- **Week 3:** Review of linear algebra, nonlinear dynamics
- **Week 4:** Nonlinear dynamics
- **Week 5:** Base isolation
- **Week 6:** Passive dampers: viscous and friction dampers
- **Week 7:** Classical control: feedback control
- **Week 8:** State-space control; *Midterm Exam* covering wks 1-7
- **Week 9:** State-space control
- **Week 10:** Estimator design
- **Week 11:** Compensator design
- **Week 12:** Compensator design, Advanced control topics: semi-active devices, etc.
- **Week 13:** Advanced control topics: semi-active devices, adaptive control, etc.
- **Week 14:** *Project Presentations* and Course Wrap-up

The work required from the students will be: (1) regular homework (due every other week starting week 2) that is related to material presented in the lectures, (2) a term project that will involve detailed design of supplemental control systems for blast, wind, or earthquake hazard mitigation of civil structures, and (3) a midterm and final examination.

Other Pertinent Course Information

**Attendance:**

Attendance and class participation are required. Each unexcused absence will result in a 5 point deduction of your final course grade.

The reasons absences are considered excused by the university are the following:
1. Participation in an activity [appearing on the university authorized activity list](http://studentactivities.tamu.edu/stuactweb/submainpages/authsponmain.htm)
2. Death or major illness in a student's immediate family
3. Illness of a dependent family member
4. Participation in legal proceedings or administrative procedures that require a student's presence
5. Injury or Illness that is too severe or contagious for the student to attend class. Must be substantiated by note signed by a medical professional (doctor or nurse).
6. Required participation in military duties
7. Mandatory admission interviews for professional or graduate school which cannot be rescheduled

Only University excused absences will be accepted for makeup exams/quizzes. It is the student’s responsibility to make arrangements to reschedule exams/quizzes. The student must notify the instructor as soon as possible after the absence, but no later than the end of the second working day after the last date of absence. If the absence occurs the same day as a scheduled exam or other graded procedure, the student must notify his/her instructor or department by the end of the next working day after the absence in order to ensure full rights. The student is responsible for providing satisfactory evidence (as determined by the instructor) to the instructor within one week of his or her absence return to substantiate the reason for absence.

Late Policy
All assignments are due at the beginning of class on the day the assignment is due unless otherwise noted on the assignment. Missing deadlines at work can result in losing an important job. As such assignments turned in after the beginning of class will lose 20% of the total points possible for each day it is late (i.e., an assignment received at 5 pm on the day it is due will lose 20%). No credit will be given for an assignment turned in later than 2 days after the date it is due.

Americans with Disabilities Act (ADA)

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

Academic Integrity

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

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

Students are expected to understand and abide by the Aggie Honor Code presented on the web at: http://www.tamu.edu/aggiehonor. The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this class, which include but at not limited to syllabi, notes, quizzes, exams, 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.

No form of scholastic dishonesty (cheating, plagiarism, etc.) will be tolerated. As commonly defined, plagiarism consists of passing off as one’s own the ideas, word, 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 permission of that person. This includes copying material from books, reports, journals, pamphlets, handouts, other publications, web sites, etc., without giving appropriate credit for those ideas or without identifying material as quotations when taken directly from another source.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted on behalf of Electrical & Computer Engineering

2. Course prefix, number and complete title of course: ECEN 760 Introduction to Probabilistic Graphical Models

3. Course description (not to exceed 50 words): (3-0) Credit 3. Broad overview of various probabilistic graphical models, including Bayesian networks, Markov networks, conditional random fields, and factor graphs; relevant inference and learning algorithms, as well as their application in various science and engineering problems will be introduced throughout the course.

4. Prerequisite(s): Undergraduate level probability theory. Basic programming skill in any programming language (C, C++, Python, Matlab, etc.)

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

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

7. Has this course been taught as a 489/689? ☑ Yes ☐ No If yes, how many times? 1
   Indicate the number of students enrolled for each academic period it was taught. 15 enrolled, 15 audit

8. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

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

10. Prefix  Course #  Title (excluding punctuation)

    ECEN  760  INTRO PROB GRAPHERICAL MDL

    Lect.  Lab  SCh  CIP and Fund Code  Admin. Unit  Acad. Year  EICE Code
    0  3  0  0  0  3  1  4  1  0  0  1  0  0  0  0  4  0  1  0  -  1  1  0  0  3  6  3  2

    Approval recommended by:

    Robin Autenrieth
    Level 6

    Date

    Chair, College Review Committee
    Date

    Dean of College
    Date

    Date

    Effective Date

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201.
Curricular Services – 11/07
Introduction to Probabilistic Graphical Models

Instructor: Byung-Jun Yoon Email: bijoon@ece.tamu.edu Tel: 845-6942 Office: Zachry 216G Office Hours: TBA

Location: TBA

Time: Tue/Thu 3:55-5:10PM

Course Description: (3-0) Credit 3. Broad overview of various probabilistic graphical models, including Bayesian networks, Markov networks, conditional random fields, and factor graphs; relevant inference and learning algorithms, as well as their application in various science and engineering problems will be introduced throughout the course.

Prerequisites:
Undergraduate-level probability theory
Basic programming skill in any programming language
(C/C++, Pearl, Python, Matlab, R, etc.)

Textbooks:
D. Koller and N. Friedman, Probabilistic Graphical Models: Principles and Techniques, MIT Press. (main textbook)
F. V. Jensen, Bayesian Networks and Decision Graphs, Springer. (recommended)
R. E. Neapolitan, Learning Bayesian Networks, Prentice Hall. (recommended)

Grading:
Homework assignments: 60%
Final exam and/or final project: 40%
Late homework will not be accepted except for legitimate reasons recognized by the university.

A (100-85%), B (84-70%), C (69-55%), D (54-40%), F (39-0%)
Course Topics & Plan:

<table>
<thead>
<tr>
<th>Topics</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1 Introduction</td>
<td>1.5</td>
</tr>
<tr>
<td>2 Review: Basic Probability Theory</td>
<td>1.5</td>
</tr>
<tr>
<td>3 Basic Graph Theory</td>
<td>3</td>
</tr>
<tr>
<td>4 Bayesian Network</td>
<td>9</td>
</tr>
<tr>
<td>5 Undirected Graphical Models</td>
<td>9</td>
</tr>
<tr>
<td>6 Exact Inference</td>
<td>6</td>
</tr>
<tr>
<td>7 Approximate Inference</td>
<td>6</td>
</tr>
<tr>
<td>8 Learning Probabilistic Graphical Models</td>
<td>6</td>
</tr>
<tr>
<td>9 Application of Probabilistic Graphical Models</td>
<td>3</td>
</tr>
</tbody>
</table>

**Academic Integrity:**

*Aggie Code of Honor* (http://www.tamu.edu/aggiehonor)

"Aggies do not lie, cheat, or steal nor do they tolerate those who do."

Students are expected to attend all classes, complete assignments on time, and participate fully in class discussions and group projects. Violations will be handled in accordance with the Texas A&M University Regulations governing academic integrity.

**American with Disabilities Act:**

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of: Mechanical Engineering

2. Course prefix, number and complete title of course: MEEN 656: Mechanical and Physical Properties of Thin Films

3. Catalog course description (not to exceed 50 words): Mechanical properties (hardness, stress, strain, delamination, fracture) of films; nanomechanical testing techniques; electrical properties of thin films; electrical properties measurement techniques; magnetic properties of films; magnetic properties measurement techniques; laboratory includes (1) thin film fabrication (sputtering, PVD); (2) nanomechanical testing; (3) electrical/magnetic measurement.

4. Prerequisite(s): MEEN 222 or MSEN 601, or basic materials science background

Cross-listed with: 

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

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

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

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

M.S. and Ph.D. in Mechanical Engineering

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

9. Prefix Course # Title (excluding punctuation)

<table>
<thead>
<tr>
<th>MEEN</th>
<th>6</th>
<th>5</th>
<th>6</th>
<th>PROPERTIES OF THIN FILMS</th>
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</thead>
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<tr>
<th>Lect</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
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<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Approval recommended by:

S.C. Lau
Department Head - Type Name & Sign
Date

Chair, College Review Committee
Date

Dean of College
Date

Dean of College
Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services
Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/09
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Mechanical Engineering

2. Course prefix, number and complete title of course: MEEN 640: Mechanical and Physical Properties of Thin Films

3. Catalog course description (not to exceed 50 words): Mechanical properties (hardness, stress, strain, delamination, fracture) of films; nanomechanical testing techniques; electrical properties of thin films; electrical properties measurement techniques; magnetic properties of films; magnetic properties measurement techniques; laboratory includes (1) thin film fabrication (sputtering, PVD); (2) nanomechanical testing; (3) electrical/magnetic measurement.

4. Prerequisite(s): MEEN 222 (for undergraduate) or equivalent materials course

Cross-listed with:

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

5. Is this a variable credit course? ☑ No

If yes, from ______ to ______

6. Is this a repeatable course? ☑ No

If yes, this course may be taken ______ times.

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

7. This course will be:

a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S. and Ph.D. in Mechanical Engineering

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

Attach approval letters.

9. Prefix  MEEN  

Course #  640  

Title (excluding punctuation)  Mechanical and Physical Properties of Thin Films

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>FICE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0 0 0 3 1 4 1 9 0 1 0 0 0 6 1 9 2 0 1 0 - 1 1 0 0 3 6 3 2</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Approval recommended by:

Department Head - Type Name & Sign  S.C. Lau  2/3/2010

Date

Department Head - Type Name & Sign  Robin Autenrieth  5-10-18

(if cross-listed course)

Date

Date

Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/09
MEEN 656 (3 Credits)

SYLLABUS – Introduction to Mechanical and Physical Properties of Thin Films and Coatings

Fall 2009

Instructor Information
Instructor: Xinghang Zhang
Office Phone: 979-845-2143
E-mail: zhangx@tamu.edu

Office Hour: Wednesday 3:30 - 5 pm, or by appointment.
Note: Office hour will be in ENPH 222 (office side)

<table>
<thead>
<tr>
<th>Class Location</th>
<th>Class Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blocker 148</td>
<td>M W F 12:40 to 1:30 pm</td>
</tr>
</tbody>
</table>

Prerequisite

MEEN 222-502 or MSEN 601, or basic materials science background

Course Topics & Calendar
Topics
• Provides graduate students with fundamental knowledge on thin films and coatings widely used for a variety of applications.
• Instills in students the relationships between mechanical and physical properties (thermal, electrical, optical, and magnetic) and the microscopic configuration that results from specific chemical bonding, crystal structure, and microstructure; processing of thin films; defects in thin films; nucleation and growth. Enables students to predict mechanical and physical properties from processing and microstructure.
• Introduces laboratory experimentation and presentation of materials test results.

STUDENT REQUIREMENTS

• Take responsibility for individual learning
• Take responsibility for other individual's learning through participation in team activities

Grading Policy (To be determined)
The table below shows that your grade is 60% individual work and the remainder is team performance. I will assign the teams. Each team will have 2-3 students from hopefully different department. Teams will work cooperatively on team projects and laboratory reports.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Percent of Grade</th>
<th>Work Component</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>30</td>
<td>Individual work in a closed book exam. One formula sheet allowed. Exam is comprehensive</td>
<td>Dec. 14, Mon 10:30 am – 12:30pm</td>
</tr>
<tr>
<td>Homework</td>
<td>0</td>
<td>Team work is encouraged.</td>
<td>Spread throughout the semester.</td>
</tr>
<tr>
<td>Lab and Lab Reports (2-3 labs)</td>
<td>25</td>
<td>Team work. One report per team.</td>
<td>Spread throughout the semester.</td>
</tr>
<tr>
<td>Other team project – term paper</td>
<td>25</td>
<td>Term paper and presentation (A predetermined topic by the instructor)</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Midterm Exam (20%)**

You will take a one-hour exam in the class during the semester which worth 25% of your grade.

**Final Exam (30%)**

The final exam will occur at the scheduled final time. The final will be worth 35% of your grade and it will be comprehensive, that is, any topic covered during the semester might appear on the final. **YOU MAY NOT TAKE THE FINAL EXAM EARLY. DO NOT PLAN TO TRAVEL UNTIL YOU HAVE COMPLETED THE EXAM.** If you do not make arrangements to take the exam late, I will record a grade of zero for the final and assign your course grade. If you have a significant reason for delaying the completion of the course I might agree to give you an incomplete. I must approve this in advance.

The final exam is a closed book and comprehensive test. We allow one two-side sheet of 8.5 x 11 inch paper that is 0.001 to 0.010 inches thick for your notes. All notes and images on the sheet must be hand drawn. No machine reproduced images are allowed. You must attach your note sheet to the final exam or we will not grade it.

**Homework (0%)**

Students are encouraged to work on their homework. However, homework will not be graded.

**Policy for make-up exams, quizzes and labs**
Make-up exams, quizzes and labs will be offered to those who have university excused absence as described by student rules.

**Lab Reports (25%)**
Each group (with two teams) submits a single laboratory report for each experiment. The experiments will appear in the syllabus update. You will perform 3 experiments. We will provide the report format. Team roles should rotate with each experiment. You must contribute to lab and lab report to get credits.

**Other team project – term paper presentation and report (25%)**
Each team will select a topic on materials science from the list suggested by the instructor. A presentation will be 25 min long followed by 5 min question and answer. Presentation and term paper will be evaluated and graded. The team can determine the format of presentation. The time of the presentation will spread out during the semester. And the topic will be related to the subject of the course before the presentation time.

**For lab reports and team project**
COVER SHEET: The cover sheet must include the date that you submitted the lab reports or term paper and this statement:

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

Each team will submit one lab report. The detailed format of lab reports will be given later. Your signature must appear on the cover sheet.

**Absences**
I handle absences as required by the student rules.

**Excused Absences**
7.1. The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for absence. Among the reasons absences are considered excused by the university are the following:
7.1.6. Injury or illness that is too severe or contagious for the student to attend class.
7.1.6.1 Injury or illness of three or more days. For injury or illness that requires a student to be absent from classes for three or more university business days (to include classes on Saturday), the student should obtain a medical confirmation note from his or her medical provider. The Student Health Center or an off-campus medical professional can provide a medical confirmation note only if medical professionals are involved in the medical care of the student. The medical confirmation note must contain the date and time of the illness and medical professional's confirmation of needed absence.
7.1.6.2. Injury or illness less than three days. Faculty members may require confirmation of student injury or illness that is serious enough for a student to be absent from class for a period less than three university business days (to include classes on Saturday). At the discretion of the faculty member and/or academic department standard, as outlined in the course syllabus, illness confirmation may be obtained by one or both of the following methods:
a. Texas A&M University Explanatory Statement for Absence from Class form available at http://attendance.tamu.edu
b. Confirmation of visit to a health care professional affirming date and time of visit.

7.1.6.3. An absence for a non acute medical service does not constitute an excused absence.

**Recommended course text materials.**

I will use some chapters of the following textbooks for this class.

   ISBN: 0521529778

   ISBN: 0125249756

3. *Electronic Thin Film Science: For Electrical Engineering and Materials Scientist*
   By King Ning Tu (1996)
   ISBN: 0024215759

   ISBN: 008044640X

   ISBN: 0080446396

   ISBN: 038795144X

**Calendar (Tentative schedule)**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 and 2</td>
<td>Lecture 1-2</td>
</tr>
<tr>
<td></td>
<td>(1) Brief introduction</td>
</tr>
<tr>
<td></td>
<td>(2) Thin film deposition techniques</td>
</tr>
<tr>
<td></td>
<td>(3) Focus on sputtering</td>
</tr>
<tr>
<td>Week 2</td>
<td>Lecture 3-4</td>
</tr>
<tr>
<td></td>
<td>Microstructure and defects in thin films</td>
</tr>
<tr>
<td></td>
<td>Epitaxy, texture, grain size, dislocations, interface</td>
</tr>
<tr>
<td>Week 3 Lab 1 – deposition</td>
<td><strong>Lab 1: Deposition of thin films</strong></td>
</tr>
<tr>
<td></td>
<td>(1) Film thickness effect</td>
</tr>
<tr>
<td></td>
<td>(2) Deposition rate effect</td>
</tr>
</tbody>
</table>
| Week 3 | Lecture 4-5  
(1) General overview of mechanical properties  
(2) Brief intro to film mechanical properties:  
  Film hardness, modulus, tensile strength,  
  Indentation size effect,  
  Other size effect |
|-------|-----------------------------------------------------|
| Week 4 | Lecture 7 - 8  
Film stress and curvature of substrate |
| Week 5 (students presentations) | **Lecture By students**  
Nanomechanical testing techniques  
(1) Nanoindentation,  
(2) Film stress measurement  
(3) Tension  
(4) Bulge test  
(5) Micropillar tests |
| Week 5, 6 | Lecture 9-10  
Stress in patterned films |
| Week 6 | Review for midterm exam |
| Week 7 Lab 2 Nanoindentation | **Lab 2: Test the hardness of thin films**  
(1) Indentation size effect  
(2) Deposition rate effect  
(3) Layer thickness effect |
| Oct. 14 Wed. | **Midterm exam** |
| Week 8 | Lecture 11  
Delamination of films |
| Week 8, 9 | Lecture 12-13  
Epitaxy, stress and critical thickness  
(1) Brief introduction to theory of dislocations (1 lect)  
(2) Stress textbook, Chapter 6 (2 lectures) |
| Week 9 Research lecture | **Research lecture 14:**  
(1) Nanotwinned metal films  
(2) Nanolayer films |
| Week 10 | Lecture 15  
Electrical properties of thin films – general introduction  
Conductivity, and charge carrier mobility |
| Week 10 | Lecture 16  
Electromigration  
Film thickness effect, layer thickness effect |
### Lecture by students

Electrical properties measurement techniques and electrical properties of thin films

### Lab 3: Test the electrical resistivity of thin films

- Film thickness effect
- Deposition rate effect
- Layer thickness effect

### Lecture 17-18. Magnetic properties of thin films

- General concept - magnetisms
- Application of magnetic thin films
  - Magnetoresistance – GMR effect

### Lecture by students

Magnetic properties measurement techniques and magnetic properties of thin films

### Lecture 19. Other applications of thin films

- Thin film gas sensor – hydrogen

### Student presentation

1. Functional oxide thin films
2. Radiation damage in thin films

### Student presentation

1. Magnetic shape memory alloy thin films
2. Solar cell thin films

### Review for final exam

---

**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 the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.

**Academic Integrity Statement**

**Aggie Honor Code:** "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.”

**Supplemental Reading Materials**


2. *Physical Vapor Deposition of Thin Films*, By John E. Mahan (2000),
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Petroleum Engineering

2. Course prefix, number and complete title of course: PETE 642-Formation Damage: Mechanisms and Remediation

3. Catalog course description (not to exceed 50 words): Identification and development of solutions for mechanisms of formation damage that can occur during drilling, completion, and following chemical treatments; includes interaction of cleaning fluids with the formation brines, rock and oil.

4. Prerequisite(s): Graduate classification

Cross-listed with:

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

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

6. Is this a repeatable course? ☑ No

If yes, this course may be taken ______ times.

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

7. This course will be:

a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S., M.E., Ph.D. in Petroleum Engineering or related Engineering

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

9. Prefix Course # Title (excluding punctuation)

<table>
<thead>
<tr>
<th>PETE</th>
<th>642</th>
<th>FORM</th>
<th>DAMAGE</th>
<th>MECH</th>
<th>&amp; REMED</th>
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</table>

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>FICE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>051</td>
<td>325</td>
<td>00106</td>
<td>2210</td>
<td>10-11</td>
<td>03632</td>
</tr>
</tbody>
</table>

Approval recommended by:

[Signature]

Department Head - Type Name & Sign

Date

[Signature]

Department Head - Type Name & Sign
(if cross-listed course)

Date

[Signature]

Submitted to Coordinating Board by:

[Signature]

Associate Director, Curricular Services

Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.

Curricular Services – 3/09
Course title and number
PETE 642 - Formation Damage: Mechanisms and Remediation

Term (e.g., Fall 200X)
Summer 2010 – 1st session

Meeting times and location
TR, 10:00 a.m.- 1:45 p.m., RICH 302

Course Description and Prerequisites

Identification and development of solutions for mechanisms of formation damage that can occur during drilling, completion, and following chemical treatments; includes interaction of cleaning fluids with the formation brines, rock and oil.
Prerequisite: Graduate classification.

Learning Outcomes or Course Objectives

The objectives of the course are for students to:

1. Highlight the importance of formation damage and how it impacts well performance. Oil, gas and waters supply wells are damaged during their lifetime. Various types of damage can occur during drilling, completion and production.
2. Identify damage type and location which is the first step in designing chemical treatment to remove formation damage. Well completion, bottomhole conditions, and type of fluids in the wellbore should also be considered. Failure to consider these parameters will result in more damage than originally thought.
3. Discuss field cases reinforcing the importance of problem identification and fluid selection that take into account downhole pumps and well tubulars.

Instructor Information

Name
H.A. Nasr-El-Din

Telephone number
(979) 862-1473

Email address
hisham.nasreldin@pe.tamu.edu

Office hours
TR, TBD

Office location
610 Richardson Building

Textbook and/or Resource Material

Several Textbooks will be used, including, but not limited to:
Reservoir Formation Damage, F. Civan, 2000
Emulsions: Fundamentals and Applications in the Oil Industry, L.L. Schramm, 2000
Technology for Cleaning Industrial Equipments, W.W. Frenier, 2001
Grading Policies

Homework..................................................................................................................(40%)
Class Project..................................................................................................................(30%)
Final Exam.....................................................................................................................(30%)
Total................................................................................................................................(100%)

Grading Scale
A....................................................................................................................................90-100%
B....................................................................................................................................80-89%
C....................................................................................................................................70-75%
D....................................................................................................................................60-66%
F....................................................................................................................................0-59%

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Introduction</td>
<td>Definitions, impact of well performance, skin damage, and how to measure it in the field</td>
</tr>
<tr>
<td></td>
<td>Clays and Feldspars</td>
<td>Structures and chemical composition of various clays and feldspars, types of clays and how they impact well performance</td>
</tr>
<tr>
<td>3-5</td>
<td>Fines Migration, Clay Swelling and Clay Stabilizers</td>
<td>Fines migration and permeability decline, corelood experiment to determine critical salt concentration, impact of ( \text{pH} ) on migration and swelling of clays, cationic polymers as clay stabilizers</td>
</tr>
<tr>
<td></td>
<td>Damage due to Drilling and Completion Fluids and Injection Waters</td>
<td>Types of drilling and completion fluids, filter cake characteristics, and various methods to remove it, water blockage, surface tension of completion fluids, surfactants to reduce surface tension</td>
</tr>
<tr>
<td>6-8</td>
<td>Damage due to Perforation</td>
<td>How to perforate various wells, perforation and its impact on well performance, damage due to perforation</td>
</tr>
<tr>
<td></td>
<td>Formation Damage due to Organic Deposition</td>
<td>Asphaltenes, Waxes, and Naphtanantes, Mechanisms of Organic Deposition, Removal, and Mitigation. Damage due to suspended solids and bacteria</td>
</tr>
<tr>
<td>9-12</td>
<td>Formation Damage due to Inorganic Scale</td>
<td>Types of scales encountered in oilfield. Mechanisms of scale formation. Scale Removal Methods, Radioactive Tracer Logs, and Scale Mitigation Treatments</td>
</tr>
<tr>
<td></td>
<td>Formation Damage due to EOR</td>
<td>Damage due to alkaline flooding, damage due to ( \text{CO}_2 ) flooding, damage due to polymer flooding, damage due to steam flooding</td>
</tr>
<tr>
<td>13-15</td>
<td>Formation Damage due to Chemical Treatments</td>
<td>Damage due to scale squeeze treatment, damage due to mud acid treatments, damage due to additives</td>
</tr>
</tbody>
</table>
Damage Removal

Various chemical treatments available to remove various types of damage. Chemicals used in damage removal will be discussed, including acids, oxidizers, chelating agents, enzymes and combinations of these chemicals.

Other Pertinent Course Information

Americans with Disabilities Act (ADA)

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

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

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

Date: March 4, 2010

To: Dr. David Reed
   Graduate Council Chair

FROM: Dr. Andreas Kronenberg
      Department Head and Professor
      Department of Geology and Geophysics

cc: Dr. Dan Hill

SUBJECT: PETE New Graduate Course Requests

The following new Graduate Petroleum Engineering (PETE) courses have been submitted for approval for the 2010-2011 academic year:

- **PETE 642** – Formation Damage: Mechanisms and Remediation
- **PETE 643** – Oil Field Chemistry
- **PETE 644** – CO₂ Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR)
- **PETE 645** – Upscaling of Geologic Models for Flow Simulation
- **PETE 646** – Reservoir Characterization and Forecasting

The Department of Geology and Geophysics supports the offering of these courses.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Petroleum Engineering

2. Course prefix, number and complete title of course: PETE 643 - Oil Field Chemistry

3. Catalog course description (not to exceed 50 words): The role of chemistry in well stimulation, water shut-off treatments, scale removal, mitigation, downhole corrosion issues, organic deposition, denufent, drilling fluids and various aspects of formation damage; includes problem identification as the first step in designing chemical treatment to remove formation damage.

4. Prerequisite(s): Graduate classification

5. Is this a variable credit course? ☒ No

6. Is this a repeatable course? ☒ No

7. This course will be:

   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S., M.E., Ph.D. in Petroleum Engineering or related Engineering

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

9. Prefix | Course # | Title (excluding punctuation) | Admin. Unit | Acad. Year | FICE Code
          |          |                            |              |            |               
PETE     | 643      | OIL FIELD CHEMISTRY        | 221          | 10 - 11    | 00 36 32     
        |          |                            |              |            |               

Approval recommended by:

Stephen A. Holditch
Department Head - Type Name & Sign
Date: 4 Jan 2010

Robin Autenrieth
Chair, College Review Committee
Date: 2-8-10

Department Head - Type Name & Sign
(if cross-listed course)
Date:

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/09
Course title and number          PETE 643 - Oil Field Chemistry
Term (e.g., Fall 200X)           Fall 2010
Meeting times and location      TBD

Course Description and Prerequisites
The role of chemistry in well stimulation, water shut-off treatments, scale removal, mitigation, downhole corrosion issues, organic deposition, dementing, drilling fluids and various aspects of formation damage; includes problem identification as the first step in designing chemical treatment to remove formation damage.
Prerequisite: Graduate classification

Learning Outcomes or Course Objectives
The objectives of this course are for students to:

1. Highlight the importance of chemistry in well treatments. Oil, gas and water supply wells are damaged during their life time. Various types of damage can occur during drilling, completion and production.
2. Identify problems as the first step in designing chemical treatment to remove formation damage. Well completion, and type of fluids in the wellbore should be also considered. Failure to consider these parameters will result in more damage than originally thought.
3. Discuss field cases to reinforce the importance of problem identification and fluid selection that takes into account downhole equipment and well tubulars.

Instructor Information
Name                                  H.A. Nasr-El-Din
Telephone number                      (979) 862-1473
Email address                         hisham.nasreldin@pe.tamu.edu
Office hours                          TBD
Office location                       610 Richardson

Textbook and/or Resource Material
Several textbooks will be used, including, but not limited to: Corrosion and Scale Handbook, J.R. Becker, 1988
Technology for Cleaning Industrial Equipment, W. W. Frenier, 2001
Chemicals for Oil Field Operations, J. I. DiStasio, 1981
Well Treatments and Water Shut-off by Polymer Gels, L.J. Zithe, 2000
Surfactants Fundamentals and Applications in the Oil Industry, L.L. Schramm, 2000
# Grading Policies

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>(40%)</td>
</tr>
<tr>
<td>Class Presentations</td>
<td>(30%)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>(30%)</td>
</tr>
<tr>
<td>Total</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

## Grading Scale

- **A** ........................................... 90-100%
- **B** ........................................... 80-89%
- **C** ........................................... 70-79%
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- **F** ........................................... 0-59%

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

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<tr>
<td>1-2</td>
<td>Inorganic Scale</td>
<td>Types of scales encountered in oilfield, Mechanisms of scale formation, Scale Removal Methods Radioactive Tracer Logs, and Scale Mitigation Treatments</td>
</tr>
<tr>
<td>3-4</td>
<td>Organic Deposition</td>
<td>Asphaltenes and Waxes, Mechanisms of Organic Deposition, Removal of Organic Deposition, and Mitigation of Organic Deposition</td>
</tr>
<tr>
<td>5-7</td>
<td>Corrosion in the Oil Field</td>
<td>Review of corrosion theory, Corrosion protection during well stimulation, Corrosion protection in sour wells, Protection of Cr-based tubulars, Corrosion of organic acids, Microbial corrosion, and Removal of corrosion products</td>
</tr>
<tr>
<td>8-9</td>
<td>Acids Used in Carbonate Formations</td>
<td>Emulsified Acid, In Situ Gelled Acids, Viscoelastic Surfactant-Based Acids, Cement Bond Logs, and Foamed Acids</td>
</tr>
<tr>
<td>10-11</td>
<td>Acids Used in Sandstone Formations</td>
<td>Mud acids, Retarded HF-based acids, and Chelating Agents</td>
</tr>
<tr>
<td>12-13</td>
<td>Water Shut-Off Using Chemical Means</td>
<td>Sodium Silicate Gels, Inorganic scale as a means for water shut-off, Gelling Polymers using metal cross-linkers, and Relative permeability modifiers</td>
</tr>
<tr>
<td>14-15</td>
<td>Recent Advances in Cementing and Drilling Fluids</td>
<td>Light weight cements, Flexible cements, Acid Resistant cement, New weight material for drilling fluids, Emulsifiers used in oil-based mud, and techniques to remove various filter cakes</td>
</tr>
</tbody>
</table>

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## Other Pertinent Course Information
Americans with Disabilities Act (ADA)

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

Academic Integrity

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

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

Date: March 4, 2010
To: Dr. David Reed
Graduate Council Chair

FROM: Dr. Andreas Kronenberg
Department Head and Professor
Department of Geology and Geophysics

cc: Dr. Dan Hill

SUBJECT: PETE New Graduate Course Requests

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- PETE 642 – Formation Damage: Mechanisms and Remediation
- **PETE 643** – Oil Field Chemistry
- PETE 644 – CO₂ Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR)
- PETE 645 – Upscaling of Geologic Models for Flow Simulation
- PETE 646 – Reservoir Characterization and Forecasting

The Department of Geology and Geophysics supports the offering of these courses.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Petroleum Engineering

2. Course prefix, number and complete title of course: PETE 644 - CO2 Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR)

3. Catalog course description (not to exceed 50 words): Understanding the need and potential of CO2 captures and uses, including sequestration and Enhanced Oil Recovery (CCS-EOR), the scientific, technological and economic aspects of identifying and implementing a CCS-EOR: overview of safety, environmental and legal aspects.

4. Prerequisite(s):

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

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

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

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

7. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

   M.S., M.E., Ph.D. in Petroleum Engineering or related Engineering

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

9. Prefix: PETE
   Course #: 644
   Title (excluding punctuation): CO2 Capture and Uses

   Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code
   3 0 3 1 2 2 2 1 0 1 0 0 6 2 2 1 0 1 1 0 3 6 3 2

   Approval recommended by:

   Stephen A. Holditch
   Department Head - Type Name & Sign
   Date

   Robin Autenrieth
   Chair, College Review Committee
   Date

   (if cross-listed course)

   Department Head - Type Name & Sign
   Date

   Robin Autenrieth
   Dean of College
   Date

   David W. Reed
   Dean of College
   Date

   Submitted to Coordinating Board by:

   Associate Director, Curricular Services

   Date

   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Course title and number  PETE 644 - CO₂ Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR)
Term (e.g., Fall 200X) Fall 2010
Meeting times and location TR, 9:35 -10:50 a.m., RICH 208

Course Description and Prerequisites
Understanding the need and potential of CO₂ captures and uses, including sequestration and Enhanced Oil Recovery (CCS-EOR), the scientific, technological and economic aspects of identifying and implementing a CCS-EOR; overview of safety, environmental and legal aspects.
Prerequisite: Graduate classification.

Learning Outcomes or Course Objectives
The objectives of the course are for students to:

1. Understand CO₂ capture and uses, including Sequestration and Enhanced Oil Recovery (CCS-EOR).
2. Be provided with the methodology and tools to evaluate and quantify potential uncertainties and risks involved in CCS or EOR.
3. Overview the safety, environmental and legal aspects of CO₂ capture and uses.

Instructor Information

Name Gioia Falcone
Telephone number (979) 847-8912
Email address gioia.falcone@pe.tamu.edu
Office hours TBD
Office location 407H Richardson Building

Textbook and/or Resource Material
Selected publications from the literature; industry and governmental reports; handouts.

Grading Policies
Assignments ......................................................... (40%)
Final Project (40% final report, 20% final presentation) ........................................... (60%)
Total ........................................................................ (100%)
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Course Overview – Review of course objectives, assignments and expectations, schedule</td>
</tr>
</tbody>
</table>
| 2    | The Need for CO₂ Sequestration & CO₂ Properties  
  - Background Introduction  
  - Market for course knowledge, i.e. global warming, improved oil recovery, economics  
  - Important physical/chemical/thermodynamic properties of CO₂ |
| 3-4  | Geological Screening, Reservoir Characterization  
  - Storage options for CO₂  
  - Types of geological storage projects  
  - Screening reservoirs for suitability of CO₂ storage  
  - Potential of CO₂ sequestration and storage in US (World) Basins |
| 5-6  | Separation Aspects, Design Calculations, Efficiencies  
  - Overview of Power Plants, Gasification and IGCC  
  - Post-combustion flue gas separation: physical absorption of CO₂  
  - Chemical absorption  
  - Membrane separation  
  - Energy integration and its implication on reduction of CO₂ emissions  
  - ASPEN Lab workshop on Compressors  
  - ASPEN Lab workshop on Absorption  
  - ASPEN Lab workshop on Cryogenic System |
| 7-8  | Production Aspects, Transportation, Compression  
  - CO₂ compression and transportation to storage reservoir  
  - Compressor design and efficiency  
  - Pipeline needs, costs  
  - Production issues  
  - Transportation/recycling |
| 9    | Injectivity Problems, Well Design  
  - Well integrity  
  - Corrosion  
  - Remediation  
  - Scaling issues  
  - Asphaltene precipitation |
| 10   | EOR Uses, Material Balance Approaches  
  - Performance assessment: Planning for and mitigating potential leakage and remediation issues  
  - EOR case studies  
  - Volumes injected/recovered – stored |
Geologic Storage Modeling: Tools and Techniques
- CO₂ storage mechanisms and modeling
- Analytical and numerical models for CO₂ migration
- Leakage: Potential pathways and quantitative assessment
- Storage performance prediction and uncertainties

Economic, Regulations
- Economic considerations of CO₂ storage
- Regulatory/legal aspects and public policy associated with CO₂ storage.
- Summary of key steps involved in developing and implementing a CO₂ capture and storage project: carbon credits/trading.
- Health, safety and environmental issues associated with CO₂ storage

Course Recap & Evaluation
- Review and integration of covered material
- Current and future research direction
- Evaluation forms

Student Paper/Project Presentations

Other Pertinent Course Information

Americans with Disabilities Act (ADA)

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

Academic Integrity

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

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

Date: March 4, 2010

To: Dr. David Reed
   Graduate Council Chair

FROM: Dr. Andreas Kronenberg
      Department Head and Professor
      Department of Geology and Geophysics

cc: Dr. Dan Hill

SUBJECT: PETE New Graduate Course Requests

The following new Graduate Petroleum Engineering (PETE) courses have been submitted for approval for the 2010-2011 academic year:

- PETE 642 – Formation Damage: Mechanisms and Remediation
- PETE 643 – Oil Field Chemistry
- PETE 644 – CO₂ Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR)
- PETE 645 – Upscaling of Geologic Models for Flow Simulation
- PETE 646 – Reservoir Characterization and Forecasting

The Department of Geology and Geophysics supports the offering of these courses.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Petroleum Engineering

2. Course prefix, number and complete title of course: PETE 645 - Upscaling of Geologic Models for Flow Simulation

3. Catalog course description (not to exceed 50 words): In-depth understanding of current approaches to upscaling of 3D geologic models for reservoir flow simulation; includes development of upscaling solvers.

4. Prerequisite(s): Graduate classification

Cross-listed with:

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

5. Is this a variable credit course? □ Yes ☒ No

If yes, from _____ to _____

6. Is this a repeatable course? □ Yes ☒ No

If yes, this course may be taken _____ times.

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

7. This course will be:

a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S., M.E., Ph.D. in Petroleum Engineering or related Engineering

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

9. Prefix: PETE

Course # 645

Title (excluding punctuation) Upscaling Geologic Models for Flow Simulation

Lect. 0 Lab 3 SCI 4 CIP and Fund Code 0 0 0 1 0 1 0 6

Admin. Unit 2 2 1 0 Acad. Year 1 0 - 1 1 0 0 FICE Code 3 6 3 2

Approval recommended by:

Stephen A. Holditch, Department Head - Type Name & Sign

Date 4 Jan 2010

Robin Autenrieth, Chair, College Review Committee

Date 2-8-10

Department Head - Type Name & Sign

Date

Dean of College

Robin Autenrieth

Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.

Curricular Services – 3/09
Course title and number  PETE 645 - Upscaling of Geologic Models for Flow Simulation
Term (e.g., Fall 200X)  Fall 2010
Meeting times and location  2:20 – 5:10 p.m., Thursday, RICH 302

Course Description and Prerequisites

In-depth understanding of current approaches to upsampling of 3D geologic models for reservoir flow simulation; includes development of upsampling solvers.
Prerequisite: Graduate classification.

Learning Outcomes or Course Objectives

The objectives of the course are for students to:
1. Develop an in-depth understanding of current approaches to upsampling of geologic models for flow simulation.

Instructor Information

Name  Dr. Michael J. King
Telephone number  (979) 845-1488
Email address  mike.king@pe.tamu.edu
Office hours  W, 2:00-5:00 p.m.
Office location  401E Richardson Building

Textbook and/or Resource Material

Readings will be supplied with the course.

Grading Policies

Presentations & Class Participation ............................................................. (10%)
Homework ............................................................................................... (15%)
Major Project........................................................................................ (25%)
Mid-Term Exam ..................................................................................... (25%)
Final Exam ............................................................................................ (25%)
Total ........................................................................................................ (100%)

Grading Scale

A .............................................................................................................. 90-100%
B ............................................................................................................. 80-89%
C ............................................................................................................. 70-79%
D ............................................................................................................. 60-69%
F ............................................................................................................. 0-59%
# Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
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</table>
| 1    | Introduction to geologic modeling and flow simulation  
|      | Uses of geologic models and reservoir simulators  
|      | Understanding the overall iterative workflow  
|      | Streamline flow visualization |
| 2    | Basic multi-phase flow equations in porous media  
|      | Black oil equations  
|      | Derivation of the pressure equation  
|      | Variational formulation  
|      | Neumann and Dirichlet boundary conditions |
| 2-3  | Finite difference/Finite element discretizations/solver projects  
|      | Five point discretization (2D)  
|      | Peaceman Well Indices (2D)  
|      | O/U method (2D)  
|      | Seven point discretization (2D)  
|      | Development of student projects |
| 4    | Grid upscaling, Volumetric upscaling & Diagnostics  
|      | Grid-to-grid operations: Property Resampling & Diagnostics  
|      | Grid-to-grid operations: Grid Coarsening & Diagnostics  
|      | Statistical layer grouping: Speed & Slowness  
|      | Statistical layer grouping: Stern & Dawson  
|      | Static property volumetric upscaling  
|      | Facies upscaling and end point saturations |
| 5-6  | Permeability upscaling  
|      | Arithmetic/Harmonic/Geometric/Power Law  
|      | Arithmetic-Harmonic/Harmonic-Arithmetic  
|      | Flow based upscaling  
|      | Renormalization  
|      | Boundary Conditions  
|      | Effective Medium  
|      | Near Well Upscaling  
|      | Global Methods  
|      | Error Estimates |
| 6-7  | Transmissibility Upscaling  
|      | Transmissibility versus Permeability  
|      | Global Methods  
|      | Semi-local Methods  
|      | Well Productivity  
|      | Half Cell Upscaling  
|      | Diagnostics |
| 8-9  | Multiphase Upscaling  
|      | Pseudoization  
|      | Capillary Pressure  
|      | Steady State Approaches  
|      | End-Point Upscaling  
|      | Dynamic Techniques |
| 10-12| Class Projects  
|      | Presentations on papers |
13-15 Class Projects
   - Upscaler solver results

Other Pertinent Course Information

Americans with Disabilities Act (ADA)

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

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

Date: March 4, 2010

To: Dr. David Reed
Graduate Council Chair

FROM: Dr. Andreas Kronenberg
Department Head and Professor
Department of Geology and Geophysics

cc: Dr. Dan Hill

SUBJECT: PETE New Graduate Course Requests

The following new Graduate Petroleum Engineering (PETE) courses have been submitted for approval for the 2010-2011 academic year:

- PETE 642 – Formation Damage: Mechanisms and Remediation
- PETE 643 – Oil Field Chemistry
- PETE 644 – CO₂ Capture and Uses: Sequestration, Enhanced Oil Recovery (EOR)
- PETE 645 – Upscaling of Geologic Models for Flow Simulation
- PETE 646 – Reservoir Characterization and Forecasting

The Department of Geology and Geophysics supports the offering of these courses.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Petroleum Engineering

2. Course prefix, number and complete title of course: PETE 646 - Reservoir Characterization and Forecasting

   Description: (not to exceed 50 words): Emphasis on geostatistical estimations/simulation and advanced mathematical inversion methods; integration of three important aspects of reservoir development and management: i) stochastic reservoir description, ii) reservoir model updating; and iii) model-predictive reservoir control and management.

4. Prerequisite(s): Graduate classification; basic familiarity with linear algebra, probability, statistics, differential and integral calculus and general reservoir engineering.

5. Is this a variable credit course? □ Yes X No

   If yes, from ______ to _______

6. Is this a repeatable course? □ Yes X No

   If yes, this course may be taken ______ times.

   Will this course be repeated within the same semester? □ Yes X No

7. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S., M.E., Ph.D. in Petroleum Engineering or related Engineering

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

9. Prefix Course # Title (excluding punctuation)

   PETE 646 RESVR CHAR AND FORECAST

   Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code
   0 3 0 0 0 3 1 4 2 5 0 1 0 0 0 6 2 2 1 0 1 0 - 1 1 0 0 3 6 3 2

   Approval recommended by:

   Stephen A. Holden X
   Department Head - Type Name & Sign Date 8-15-10

   Robin Autenrieth
   Chair, College Review Committee Date 2-10-10

   Dean of College Date

   Robin Autenrieth
   Dean of College Date 4 Mar 2010

   David W. Boyd Date

   Submit to Coordinating Board by:

   Associate Director, Curricular Services Date

   Date Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu
Curricular Services – 3/09

58 of 80 B
Course title and number  PETE 646 - Reservoir Characterization and Forecasting
Term (e.g., Fall 200X)  Fall 2010
Meeting times and location  T, 5:15-7:45 P.M., RICH 302

Course Description and Prerequisites

Emphasis on geostatistical estimation/simulation and advanced mathematical inversion methods, integration of three important aspects of reservoir development and management: i) stochastic reservoir description, ii) reservoir model updating; and iii) model-predictive reservoir control and management.

Prerequisites: Graduate classification; basic familiarity with linear algebra, probability, statistics, differential and integral calculus and general reservoir engineering.

Learning Outcomes or Course Objectives

The objectives of the course are for students to:

1. Cover statistical modeling of spatial uncertainty used for stochastic reservoir identification.
2. Combine various data sources and geological knowledge with conceptual models of geological continuity to construct predictive reservoir models for future reservoir development and management.
3. Overview a broad range of topics including spatial variability modeling, two-point and multi-point geostatistics, reservoir parameterization, production data integration and model-predictive reservoir control and management.

Instructor Information

Name  Dr. Behnam Jafarpour
Telephone number  (979) 845-0666.
Email address  behnam.jafarpour@pe.tamu.edu
Office hours  Wednesday, 4:00-6:00 P.M. or by appointment
Office location  401F Richardson Building

Textbook and/or Resource Material

There is no required textbook for this course, however, a few main texts are listed as suggested references. Course handouts and reading material will be posted to the class shared folder on the PE server and the web for distance learning. In addition to lectures, there will be a few computational lab sessions for hands-on introduction to required geostatistical software packages, i.e. SGeMS, ECLIPSE, MATLAB and other software packages that are needed in this course.

Grading Policies

Homework...........................................................................(30%)
Midterm Exam...........................................................................(30%)
Class Project..............................................................................(40%)
Total......................................................................................(100%)
### Grading Scale

- A ................................................................. 90-100%
- B ................................................................. 80-89%
- C ................................................................. 70-79%
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- F ................................................................. 0-59%

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<td>1</td>
<td>Course Introduction and Review Material</td>
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<tr>
<td>2</td>
<td>Geostatistical Reservoir Description and Modeling; Review of Spatial Statistics, Linear Algebra</td>
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<tr>
<td>3</td>
<td>Linear Estimation and Kriging</td>
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<td>4</td>
<td>Stochastic Simulation</td>
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<tr>
<td>5-6</td>
<td>Beyond Two-Point Geostatistics</td>
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<tr>
<td>7-9</td>
<td>Reservoir Model Updating Through Production Data Integration</td>
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<tr>
<td>10-11</td>
<td>Parameterization and Model Reduction</td>
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<tr>
<td>12</td>
<td>Reservoir Control and Management; Model Predictive Control (MPC)</td>
</tr>
<tr>
<td>13</td>
<td>MPC Formulations and Solutions</td>
</tr>
<tr>
<td>14</td>
<td>Project Presentations</td>
</tr>
<tr>
<td>15</td>
<td>Final Project Report</td>
</tr>
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</table>

### Other Pertinent Course Information

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MEMORANDUM

Date: March 4, 2010

To: Dr. David Reed
   Graduate Council Chair

FROM: Dr. Andreas Kronenberg
      Department Head and Professor
      Department of Geology and Geophysics

cc: Dr. Dan Hill

SUBJECT: PETE New Graduate Course Requests

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The Department of Geology and Geophysics supports the offering of these courses.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Recreation, Park & Tourism Sciences

2. Course prefix, number and complete title of course: RPTS 636 Philosophy of Social Research

3. Catalog course description (not to exceed 50 words):
Overview of the history and development of the philosophy of social science; relationships science; issues in social research; Sociology of Knowledge; related debates in various disciplines and fields of study.

4. Prerequisite(s): Ph.D. candidate

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

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

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

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

9. Prefix Course # Title (excluding punctuation) RPTS 6 3 6 PHI LOS SO CIAL RES EARCH

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<tr>
<th>Lect.</th>
<th>Lab</th>
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<th>Acad. Year</th>
<th>FICE Code</th>
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<td>3</td>
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<td>5 2 6 2 0 1 1 - 1 2 0 3 6 3 2</td>
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</tbody>
</table>

Approval recommended by: [Signature]

Date: 1/19/10

Department Head - Type Name & Sign
Gary D. Ellis

Chair, College Review Committee
David W. Reed

Date: 1/20/10

Department Head - Type Name & Sign (if cross-listed course)

Date: 4 Mar 2010

Dean of College
David W. Reed

Date: Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/09
January 27, 2010

Memorandum

To: Dr. Gary D. Ellis, Professor and Head
   Department of Recreation, Park, and Tourism Sciences

From: Mark Fossett, Professor and Head, Department of Sociology

Subject: Support for TPTS 636 Seminar in Philosophy of Social Science

Per your request I have reviewed the materials for Recreation, Park, and Tourism Science's proposed new seminar – RPTS 636 Philosophy of Social Research. Sociology has no objection to the course you are proposing. We do not offer a similar course. It is possible that students in our graduate program would occasionally seek this seminar as a useful addition to their program of study. Please let me know when the course is approved and I will circulate information about the seminar to our graduate students.
Syllabus: RPTS 636 Philosophy of Social Research (Spring _____)

Instructor: Dr. Tazim Jamal  
Class time & location: TBA
Office: Francis Hall, 256C  
Office Hrs: TBA
Email: tjamal@tamu.edu  
Tel: (979) 845-6454

COURSE OBJECTIVES

This is a survey course on philosophical subjects of relevance to the social sciences tailored for the specific, yet diverse needs of RPTS students, as well as other students interested in social research. The course is divided into three broad parts. The first part provides a general overview of the history and development of the philosophy of social science. Relationships to the philosophy of science will be covered, and questions such as ‘what is science’ and ‘what is social science’ will be addressed here, as well as theory construction and hypothesis testing in social science research.

The philosophy of the social sciences is a descriptive and a prescriptive endeavor. The readings in the second part of the course will address a range of social science research approaches and methodologies. Subjects include research paradigms; induction; reduction; objectivity, ethics & values; interpretation & ethnography.

The philosophy of social science readings will also be examined in the context of a range of social science subject matter pertinent to recreation, park and tourism studies, such as science, technology, leisure & tourism studies, the concept of sustainability, etc. These will be addressed in the third part of the course.

LEARNING OUTCOMES AND GOALS

This course is designed to help you aim towards attaining the following learning goals and outcomes:

- Develop a good understanding of key historical, philosophical and scientific influences on the development and evolution of the social sciences and the sociology of knowledge;
- Understand some of the major disciplinary and inter-disciplinary issues and debates in various areas of social research (including areas of study related to environmental, policy and cultural studies, as well as your own areas of research interest);
- Develop knowledge and skills to critically examine the theoretical influences and methodological assumptions related to various types of social research paradigms;
- Be able to identify and engage with the political and power-related issues in social research, and develop greater self-reflexivity, analytical, and critical thinking and writing skills;
- Draw on the above to assist you in developing sounder research programs with critically examined assumptions, strategies and theoretical directions.

COURSE MATERIALS

Required Textbooks

Adorno T and Horkheimer, M (1997) Dialectic of Enlightenment. Verso. [note: translation, year, publisher may be different at campus bookstore – to discuss on first day of class]


Syllabus: RPTS 636 Philosophy of Social Research (Spring ____)


NOTE: Additional readings will complement the text books. These will be made available electronically.

**Recommended Books**


**COURSE REQUIREMENTS**

This class will be taught as a seminar. You will be asked to read the textbooks listed above. In addition, photocopied readings or reading available via e-reserve or the course web site will be assigned. Readings and topics are subject to change as philosophical issues arise pertinent to recreation, park and tourism “sciences”, & research interests of students in class. Readings & guest lectures will be announced at least one week ahead (see tentative schedule at end of the syllabus).

**READING REPORTS, PRESENTATION AND JOURNAL**

As a seminar, this course will approach its subject material primarily through discussion. This means that each student is responsible for the upkeep and the success of the class. Therefore, presence, preparation, and participation are essential. Repeated absences will lead to a loss of one letter grade on class participation.

To ensure preparation and participation, students are required to write short bi-weekly reports (1-2 pages single-spaced) on the required readings. Directions will be provided regularly on how to focus your report. Reading reports are due on the day before class at 5:00 PM, to be sent to me as an email attachment, followed by a hard copy in class. In class, students should be prepared to summarize and discuss the readings they had to prepare. You will be asked to make a short presentation on one of the biweekly reports you prepare, and questions, discussion, argument will be facilitated jointly. The reading reports and class presentation will be graded and the grade counts as class participation.

A daily, self-reflective journal should be kept—comments, thoughts, observations, reflections on readings, assignments and term project topics, theoretical insights, events in daily life and news media as they relate to the course, are all permissible to include in the daily journal. The journal can be hand-written or typed, and should be submitted by the last week of class for evaluation and grading (it will be returned to you).

**MID-TERM EXAM**

The mid-term exam is a comprehensive take-home exam and will contain two parts. The first part will examine your learning and knowledge in the course thus far. In the second part you will be asked to commence preliminary research on your final paper and formulate a clear outline. The final paper is a 20-25 double-spaced pages research paper on a topic agreed upon with the instructor. With the paper outline, you should include the following:
Syllabus: RPTS 636 Philosophy of Social Research (Spring ____)

- The **question/issue** you are analyzing, a justification for the study, **your research questions**, **working hypothesis or proposition**, a summary of what other authors say about the topic (**literature review**), in addition to the **sources you plan to draw on**.
- You will also be expected to submit an **annotated bibliography of 2-3 pages**. You are asked to write a couple of line on each work you plan to use, summarizing the main argument and possibly highlighting omissions or criticizing flaws in the argument.

The midterm exam must be emailed to the instructor by **5:00 PM on the due date**; a hardcopy should be submitted too. Late assignments may lose one letter grade – please negotiate extensions in advance.

**RESEARCH PAPER**

To complete the requirements for this seminar, you are asked to write a research paper. The research paper can be based on the class presentations and should focus on one or more questions/issues raised in this syllabus. This paper will draw on the work done for the midterm exam. The recommended **length of this final paper should be 20-25 pages**. Once you have decided on a topic for the paper, please consult with the instructor on a list of readings to start of his/her research. The final paper will draw on the preliminary work commenced for the midterm exam. It has to be **emailed to the instructor by 5:00 PM on the due date**, and a hardcopy should be submitted to the instructor as well.

**GRADE DISTRIBUTION**

Reading Reports and Presentation: 25%
Mid-term exam: 30%
Research Paper: 40%
Journal: 5%

Standard Grade Distribution
90-100 = A
80-89 = B
70-79 = C
60-69 = D
< 60 = F

**EXAMINATION DUE DATES**

Reading reports: Bi-Weekly
Midterm Exam: Date to be confirmed early in the semester
Research paper: Due date to be confirmed early in the semester

**AMERICAN DISABILITY ACT**

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room B118 of Cain Hall or call 845-1637.
PLAGIARISM

As commonly defined, plagiarism consists of passing off as one’s own ideas, the words, writings, music, graphs/charts, etc that were created by 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 have the permission of that person. It does not matter from where the material is borrowed—a book, article, material off the web, another student’s paper—all constitute plagiarism unless the source of the work is fully identified and credited. Plagiarism is cheating and a violation of academic and personal integrity and will not be tolerated. **Plagiarism carries extremely serious consequences.** To avoid plagiarism it is necessary when using a phrase, a distinctive idea, concept or sentence from another source to reference that source in your text, a footnote, or endnote. Every student in this course must comply with this code in all work submitted for a grade and will be held accountable accordingly for both individual and any team assignments.

**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: [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)
WEEKLY SCHEDULE – GENERAL (to be updated regularly)

Week I- General Introduction: What is the Philosophy of the Social Sciences?

Week II- Phil Science: Ontology & Epistemology

- Plato, Hume, Descartes, Kant (see details further below)

Week III - Phil Sci: Epistemology (cont.)

- Empiricism (Hume),
- Logical Positivism & Vienna Circle, Verification,
- Post-positivism, Falsification
- Positivism & Comte

Week IV - Empirical Laws and Theory Construction in the Sciences

- Botterill (2003) on “Critical Realism” (critique of Positivism - cont.)
- Chalmers, What is this thing called Science
- Latour & Woolgar, Laboratory Life

Week V - Disciplinary Dilemmas

- Thomas Kuhn, The Structure of Scientific Revolutions
- Other readings forthcoming

Week VI – Phil Social Science: 20th Century Influences, Paradigm Debates

- The linguistic turn (Wittgenstein’s “language games”)
- The constructivist turn (Berger & Luckmann – The Social Construction of Reality)
- Other readings forthcoming

Week VII – Structure-agency, and related issues in tourism

- Giddens’s structuration theory – an introduction to the structure-agency debate
- Ateljevic & Doome (Tourist Studies, 2003) – on social relations in tourism production-consumption
- The body in tourism (going from disembodied to embodied; power relationships)
- Structure-agency issues (Bourdieu, Giddens – in class discussion)

Week VIII – Rationality and Rational Choice Theory

- Peter Winch, The Idea of A Social Science
- Other readings forthcoming
- Commence discussion on postmodernism

WEEK IX: MID-TERM EXAM (Take home, no class)
Syllabus: RPTS 636 Philosophy of Social Research (Spring ____)

**Week X – Reduction, Individualism and Holism**

- Emile Durkheim, “Social Facts” pp. 433-440 in M&M.
- Steven Lukes, “Methodological Individualism Reconsidered” pp. 451-458 in M&M.
- Other readings forthcoming

**Week XI- Objectivity, Values and Ethics**

- Other readings forthcoming

**Week XII – Critical Research Paradigms**

- Research Paradigms: Ontology, Epistemology, Methodology, Method (Jamal & Everett re. critical approach)
- Critical Theory: Adorno & Horkheimer, *Dialectic of Enlightenment*
- Poststructuralism and the performative turn – Hollinshead: Foucault and the Eye of Power, *Tourism Management*
- Other readings forthcoming (feminist theorists, etc.)

**Week XIII – Interpretation and Ethnography**

- Phenomenology, Experience, Meaning, Understanding
- Peter Winch, *The Idea of a Social Science* (cont.)

**Week XIV – Modernity. Science, Technology, and Tourism**

- Heidegger, *The Question Concerning Technology* (discuss)
- Modernist critique of sustainable development

**WEEK XV – FINAL TERM PAPER**

- Discuss, complete and submit final paper

  *Final term paper due by ____ (via email plus hard copy at my office)*
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Statistics
   STAT 645: Applied Biostatistics and Data Analysis

3. Catalog course description (not to exceed 50 words):
   Survey of crucial topics in biostatistics: application of regression in biostatistics; analysis of correlated data; logistic and Poisson regression for binary or count data; survival analysis for censored outcomes; design and analysis of clinical trials; sample size calculation by simulation; bootstrap techniques for assessing statistical significance; data analysis using R.

4. Prerequisite(s):
   STAT 651, 652, and 659, or equivalent. Or prior approval by the instructor.

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

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

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

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

9. Prefix: STAT       Course #: 645       Title (excluding punctuation): APPL BIOSTAT & DATA ANAL

<table>
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<th>Lect.</th>
<th>Lab</th>
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<th>Admin. Unit</th>
<th>Acad. Year</th>
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Approval recommended by:
Dr. Simon Sheather
Department Head - Type Name & Sign

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

Submitted to Coordinating Board by:
Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services - 3/09

70 of 80 B
Stat 645: Biostatistics and Data Analysis - Fall 2010

Time and Place: Lecture - MWF 1:50pm-2:40pm BLOC 411;
Question and Answer Session - T 6pm-7pm BLOC 163

Instructor: Dr. Alan Dabney

Office: 525H Blocker Building
Phone: 862-7581
Email: adabney@stat.tamu.edu
Office Hours: By appointment only

Course Description: Survey of crucial topics in biostatistics: application of regression in biostatistics; analysis of correlated data; logistic and Poisson regression for binary or count data; survival analysis for censored outcomes; design and analysis of clinical trials; sample size calculation by simulation; bootstrap techniques for assessing statistical significance; data analysis using R.

Course Details: This course will present a survey of many important topics in biostatistics. The goal is for each student to gain an understanding of the statistical issues underlying these topics, as well as existing methods and their use in R. This will be a Masters-level course, suitable for students in their second year of studies. Students from disciplines other than statistics are encouraged to enroll. Whereas the existing two-semester STAT 643-644 biostatistics sequence focuses on the mathematical details of biostatistics methods, this course will be geared toward preparing Masters-level statisticians for real-world data analysis.

Course Topics

1. First week an introduction to R.
2. Two weeks on Applications of regression in biostatistics
3. Two weeks on Analysis of correlated data
4. Two weeks on Logistic and Poisson regression for binary or count data
5. Two weeks on Survival analysis for censored outcomes
6. Two weeks on The design and analysis of clinical trials
7. Two weeks on Special topics (including sample size calculations by simulation, and the bootstrap for assessing statistical significance in general testing situations)

Course Material: Textbook to be decided, although material will be representative of that in books like Applied Survival Analysis and Applied Logistic Regression by Hosmer and Lemeshow, Fundamentals of Clinical Trials by Friedman, Furberg, and DeMets, and Analysis of Longitudinal Data by Diggle, Liang, Zeger, and Heagerty, among others.
Prerequisites: STAT 651, 652, and 659, or equivalent. Or prior approval by instructor.

Computing: All computing will be done with R.

Grading: Your grade will be computed as follows:

- **Homework:** 30% - There will be periodic homework assignments. The assignments will typically involve the analysis of real datasets.
- **Exams:** 30% - There will be two midterm exams (Monday Sept. 27, and Monday Nov. 1), each counting 15% of your grade.
- **Research Project:** 40% - You will be assigned a research project requiring a comprehensive analysis of a real biostatistics dataset. Reports due Monday, Nov. 29.
- **Course grade** The following minimal standards (PP is your overall Percentage Performance) will be used in determining the course grade:
  
  \[
  90\% \leq PP \leq 100\% \Rightarrow A; \quad 80\% \leq PP < 90\% \Rightarrow B; \quad 70\% \leq PP < 80\% \Rightarrow C; \\
  60\% \leq PP < 70\% \Rightarrow D; \quad 0\% \leq PP < 60\% \Rightarrow F; 
  \]

**Incomplete Grade:** A temporary grade of I (Incomplete) at the end of a semester indicates that the student has COMPLETED THE COURSE WITH THE EXCEPTION OF A MAJOR QUIZ, FINAL EXAM, OR OTHER WORK. The instructor shall give this grade only when the deficiency is due to an authorized absence or other cause beyond the control of the student.

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**Academic Integrity Statement:** “AN AGGIE DOES NOT LIE, CHEAT, OR STEAL OR TOLERATE THOSE WHO DO.” Please refer to the Honor Council Rules and Procedures at http://www.tamu.edu/aggiehonor.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Statistics
   STAT 646 Statistical Bioinformatics

2. Course prefix, number and complete title of course:
   Catalog course description (not to exceed 50 words):
   An overview of relevant biological concepts and technologies of genomic/proteomic applications; methods to handle, visualize, analyze, and interpret genomic/proteomic data; exploratory data analysis for genomic/proteomic data; data preprocessing and normalization; hypotheses testing; classification and prediction techniques for using genomic/proteomic data to predict disease status.

3. Prerequisite(s): STAT 604, 651, 652. or equivalent. Or prior approval by the instructor.

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

5. Is this a variable credit course? Yes □ No □ If yes, from _________ to _________
   Is this a repeatable course? Yes □ No □ If yes, this course may be taken _________ times.
   Will this course be repeated within the same semester? Yes □ No □

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

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

9. Prefix Course # Title (excluding punctuation)
   STAT 646 STAT BIOINFORMATICS

   Lect. Lab SCH GIP and Fund Code Admin. Unit Acad. Year FICE Code
   0 3 0 0 0 3 2 7 0 5 0 1 0 0 0 1 2 7 4 0 8 - 1 1 0 0 3 6 3 2

Approval recommended by:

Sincerely,

Department Head

Submit to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845 8201 or sandra.williams@tamu.edu
Curricular Services – 3/09

73 of 80
Stat 646: Statistical Bioinformatics - Spring 2011

Time and Place: Lecture - MWF 1:50pm-2:40pm BLOC 411;
Question and Answer Session - T 6pm-7pm BLOC 163

Instructor: Dr. Alan Dabney
Office: 525H Blocker Building
Phone: 862-7581
Email: adabney@stat.tamu.edu
Office Hours: By appointment only

Course Description: An overview of relevant biological concepts and technologies of genomic/proteomic applications; methods to handle, visualize, analyze, and interpret genomic/proteomic data; exploratory data analysis for genomic/proteomic data; data preprocessing and normalization; hypotheses testing; classification and prediction techniques for using genomic/proteomic data to predict disease status.

Course Details High-throughput genomics / proteomics ("-omics") applications are widely used in modern biological science and have great promise for expanding our understanding of systems biology. Common characteristics of these applications include: (a) very high-dimensional datasets, with thousands of "features" (genes or proteins, for example); (b) small sample sizes (relative to the number of features); and (c) complex technical aspects of the data collection process. These characteristics present great challenges to the data analyst charged with extracting meaningful information from -omics data.

This course will present an overview of the biological concepts, technologies, and statistical challenges of -omics applications. The student will learn how to handle, visualize, analyze, and interpret -omics data, using real-world datasets. We will begin with a brief, then move on to the bulk of the course, which will be divided into: (1), (2), (3), and (4).

Course Topics

1. Two weeks an overview of the biological and technological principles behind modern high-throughput -omic technologies
2. Three weeks on exploratory data analysis (or, how to visualize and summarize -omics data)
3. Three weeks on data preprocessing and normalization (or, how to remove unwanted aspects of the data prior to statistical inference)
4. Three weeks on hypothesis testing (for the selection of interesting features from very large candidate lists)
5. Three weeks on classification and prediction (for using -omics data to predict disease status in new subjects, say)

Course Material: No textbook required. Course reading materials will consist of in-class lectures, online resources, and journal articles.
**DoStat:** We will use the DoStat course management system. To register, follow the steps below:

(a) Go to http://www.si-sv2846.com/dostat and click on the "Register here" link.
(b) Submit information for your account.
(c) After logging in, click on “Add course,” and enter the appropriate information.

**Prerequisites:** STAT 604, 651, 652, or equivalent. Or prior approval by the instructor.

**Computing:** All computing will be done with R or other freely-available resources.

**Grading:** Your grade will be computed as follows:

- **Homework:** 25% - There will be periodic homework assignments. The assignments will typically involve the analysis of real datasets from the literature.
- **Exams:** 50% - There will be two midterm exams, each counting 25% of your grade. The first exam will be on Wednesday, February 23, and the second exam will be on Wednesday, March 30.
- **Research Project:** 25% - You will be assigned a research project requiring a comprehensive analysis of a real -omics dataset. The project will require you to develop your own analysis protocol to explore and interpret your data, beginning with the data in raw format, and ending with a formal statistical writeup. Reports due Monday, April 25.

- **Course grade** The following minimal standards (PP is your overall Percentage Performance) will be used in determining the course grade:
  
  \[ 90\% \leq PP \leq 100\% \Rightarrow A; \quad 80\% \leq PP < 90\% \Rightarrow B; \quad 70\% \leq PP < 80\% \Rightarrow C; \]
  
  \[ 60\% \leq PP < 70\% \Rightarrow D; \quad 0\% \leq PP < 60\% \Rightarrow F; \]

**Incomplete Grade:** A temporary grade of I (Incomplete) at the end of a semester indicates that the student has COMPLETED THE COURSE WITH THE EXCEPTION OF A MAJOR QUIZ, FINAL EXAM, OR OTHER WORK. The instructor shall give this grade only when the deficiency is due to an authorized absence or other cause beyond the control of the student.

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Course Change Requests
Texas A&M University

Departmental Request for a Change in Course

Undergraduate  •  Graduate  •  Professional

Submit original form and attachment.(Date)

Veterinary Physiology and Pharmacology

1. This request is submitted by the Department of

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

3. Change requested

   a. Prerequisite(s): From: ____________________________ To: ____________________________
   b. Withdrawal (reason):
   c. Cross-list with:

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

   d. Change in course title and description. Enter complete current course title and current course description in item 4; enter proposed course title and proposed course description in item 5.

   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 6. Attach a course syllabus.

4. Complete current course title and current catalog course description:
   Fluorescence Detection: Steady state, time-resolved, and imaging.
   Fluorescence techniques used by biological scientists in their research, evaluation of the literature in the field, pursuit of resources, interactions with colleagues and resulting from the extension and technological opportunities available through spectroscopy; introduces graduate students in pharmacology, toxicology, biochemistry, molecular biology, and other life sciences to these issues at an early stage in their careers; develops thinking skills to make informed judgments on applicability of fluorescence techniques, evaluating the literature and in presentations, and communicate their rationales to other scientists.

5. Complete proposed course title and proposed catalog course description (not to exceed 50 words):
   Fluorescence spectroscopy and confocal/multiphoton microscopy in research; intro of pharmacology, life science, and physical science students to fluorophores, anisotropy, ligand binding, energy transfer, cytometry, lifetime imaging, correlation spectroscopy, immunochemistry, and image analysis with an emphasis on instrumental/sample artifacts, fluorescence application, literature evaluation, and communication of rationales to other scientists.

6. a. As currently in course inventory:

   Prefix  Course #  Title (excluding punctuation)
   VTPP  677  Fluorescence Detection
   Lect.  Lab  SCH  CIP and Fund Code  Admin. Unit  FICE Code  Level
   0 3 0 0 3 5 1 2 5 0 3 0 0 0 2 2 9 2 0 0 0 3 6 3 2 6

   b. Change to:

   Prefix  Course #  Title (excluding punctuation)
   VTPP  677  Fluorescence Detection
   Lect.  Lab  SCH  CIP and Fund Code  Admin. Unit  Acad. Year  FICE Code  Level
   0 4 0 0 4 5 1 2 5 0 3 0 0 0 2 2 9 2 0 1 0 1 1 0 0 3 6 3 2 6

   Approval recommended by:

   Dr. Glen Laine
   Department Head - Type Name & Sign  Date

   Chair, College Review Committee  Date

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

   Dean of College  Date

   Submitted to Coordinating Board by:

   Associate Director, Curricular Services  Date

   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-9201 or sandra-williams@tamu.edu

Curricular Services - 12/08

77 of 80 B
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

Veterinary Physiology and Pharmacology


Attach a brief supporting statement for changes made to items 3a thru 3d. and 5 below.

1. This request is submitted by the Department of

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

3. Change requested

a. Prerequisite(s):

b. Withdrawal (reason):

c. Cross-list with:

4. Complete current course title and current catalog course description:

Fluorescence Detection: Steady state, time-resolved, and imaging.

Fluorescence techniques used by biological scientists in their research, evaluation of the literature in the field, pursuit of resources, interactions with colleagues and resulting from the extension and technological opportunities available through spectroscopy, introduces graduate students in pharmacology, toxicology, biochemistry, molecular biology, and other life sciences to these issues at an early stage in their careers; develops thinking skills to make informed judgments on applicability of fluorescence techniques, evaluating the literature and in presentations, and communicate their rationales to other scientists.

5. Complete proposed course title and proposed catalog course description (not to exceed 50 words):


Fluorescence spectroscopic and imaging techniques including confocal/multiphoton laser scanning microscopy used by scientists in their research; introduction of pharmacology, toxicology, biochemistry, molecular biology, and other life science students to fluorophores and concepts such as anisotropy, quenching, resonant energy transfer, cytometry, lifetime imaging, correlation spectroscopy, immunocytochemistry, and image analysis with an emphasis on understanding the instrumental and sample artifacts for making informed judgments about the applicability of fluorescence techniques, evaluating literature, and communication of rationales to other scientists.

6. As currently in course inventory:

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b. Change to:

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Approval recommended by:

Dr. Glen Laine

Department Head - Type Name & Sign 2-3-10

Chair, College Review Committee

Dean of College

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu
Curricular Services - 12/08

78 of 80 B
Course title and number
VTTP 677 4 credits
Spring 2011
WF 3:00-5:00 Rm 308 VMR Building

Course Description and Prerequisites

Fluorescence spectroscopic and imaging techniques including confocal/multiphoton laser scanning microscopy used by scientists in their research; introduction of pharmacology, toxicology, biochemistry, molecular biology, and other life science students to fluorophores and concepts such as anisotropy, quenching, resonant energy transfer, cytometry, lifetime imaging, correlation spectroscopy, immunocytochemistry, and image analysis with an emphasis on understanding the instrumental and sample artifacts for making informed judgments about the applicability of fluorescence techniques, evaluating literature, and communication of rationales to other scientists. Prerequisite: General chemistry and biology course.

Learning Outcomes or Course Objectives

The course is an overview of fluorescence steady state, time-resolved, confocal/multiphoton imaging techniques, and instrumentation encountered by biological scientists in the conduct and dissemination of their research, in their evaluation of the literature in the field, in their pursuit of resources, in their interactions with colleagues, and resulting from the extension and technological opportunities available through spectroscopy. The course aims to introduce graduate students in pharmacology, toxicology, biochemistry, molecular biology, and other life sciences to these issues involved in understanding the advantages and artifacts associated with fluorescence techniques at an early stage in their careers. Students should develop vocabulary and thinking skills that will enhance their ability to make informed judgments on the applicability of fluorescence techniques, on evaluating the use of such reports by others in the literature and in presentations, and to communicate the rationale for their decisions to other scientists and to the broader public.

Instructor Information

Name
Dr. Friedhelm Schroeder
Telephone number
(979) 862-1433
Email address
FSchroeder@cvm.tamu.edu
Office hours
M 3:00-5:00
Office location
Rm 303 VMR Building

Textbook and/or Resource Material

Grading Policies

Students will be evaluated on the basis of submission of a mid-term and a final term paper focused on a topic covered in the course. Each paper will count 50% of the final grade.
Grading scale: A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = < 60, I = incomplete.

Course Topics, Calendar of Activities, Major Assignment Dates

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<td>Course overview and basic fluorescence</td>
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<td>2</td>
<td>Fluorescence parameters and instrumentation</td>
<td>Ch. 2, 3, 10</td>
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<td>3</td>
<td>Instrumental artifacts and intro to sample artifacts</td>
<td>Ch. 6, 7</td>
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<td>4</td>
<td>Sample artifacts, fluorescence quenching</td>
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<td>5</td>
<td>Circular dichroism, laser safety</td>
<td>Ch. 16</td>
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<td>6</td>
<td>Principles of epifluorescence, Nomarski, and confocal microscopy</td>
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<tr>
<td>7</td>
<td>Epifluorescence and confocal microscopy demonstrations</td>
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<td>8</td>
<td>Confocal fluorescence resonant energy transfer, multiphoton imaging</td>
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<td>Advanced multiphoton imaging and demonstrations, <em>mid-term paper due</em></td>
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<td>Fluorescence lifetime imaging, Fluorescence correlation spectroscopy</td>
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<td>Nanotechnology, fluorescence activated cell sorting and laser scanning cytometry</td>
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Other Pertinent Course Information

Americans with Disabilities Act (ADA)

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

**Academic Integrity**

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

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

[Signature of Student]