1. Request submitted by *(Department or Program Name)*: Department of Accounting

2. Course prefix, number and complete title of course: ACCT 603 Energy Accounting

3. Catalog course description (not to exceed 50 words):
Overview of the oil and gas industry and specialized financial accounting procedures associated with the industry; emphasis on accounting for exploration, development, production, depletion and amortization as well as joint operations, asset impairment and retirement obligation; includes reserve accounting/disclosure related to the above topics.

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<th>Prerequisite(s):</th>
<th>Cross-listed with</th>
<th>Stacked with</th>
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<tbody>
<tr>
<td>ACCT 327 with C or better; junior or senior classification</td>
<td>ACCT 403</td>
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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)*

   B.B.A. in Acct/Finc, M.S. in ACCT/FINC/MIS/HRM/ACCT (PPA Program)

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. P r e f i x | C o u r s e # | C l a s s  | L e c t . | Lab | SCH | CIP | Fund Code | Admin. Unit | Acad. Year | FICE Code |
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<tr>
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Approval recommended by:

James Benjamin
Department Head or Program Chair *(Type Name & Sign)*
Date 5/1/10

Chair, College Review Committee
Date 6/25/10

James Benjamin
Department Head or Program Chair *(Type Name & Sign)* (if cross-listed course)
Date 5/10/10

Martha Louden
Dean of College
Date 6/25/10

Chair, GC or UCC
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 – 3/10

1 of 124 B
Attachment B

Energy Accounting  
Accounting 403/603  
Spring 2010 MW 4:25-5:10

Instructor: Shannon Knight, CPA
Office: 487E Wehner
Office phone: 458-3422
E-mail: sknight@mays.tamu.edu ***Please indicate ACCT 403/603 in subject
Office hours/TA: TBA on Mays Portal

COURSE DESCRIPTION: Overview of the oil and gas industry and specialized financial accounting procedures associated with the industry; emphasis on accounting for exploration, development, production, depletion and amortization as well as joint operations, asset impairment and retirement obligation; includes reserve accounting/disclosure related to the above topics.

PREREQUISITES: Students must have completed ACCT 327, with a C or better

COURSE LEARNING OBJECTIVES:
After successfully completing this course, students should be able to accomplish the following:
- Generate financial statements completed accounts specific to an oil and gas company
- Identify risks of an E&P company and correlate them to mitigating activities
- Determine appropriate derivative strategies
- Calculate mark-to-market for derivative instruments and determine the affect on the financial statements
- Differentiate between the different types of reserves
- Assess the impact of reserves on the financial statement components
- Complete non-value based and value based reserves disclosures
- Compare and contracts the successful efforts and full-cost methods
- Classify costs of E&P activity and determine the appropriate accounting treatments
- Calculate DD&A for assets specific to an E&P company
- Determine when an impairment is appropriate and calculate that impairment
- Identify the key components of a Joint Venture Agreement, Joint Operating Agreement and the responsibilities of an operator versus a non-operator
- Produce a Joint Interest Bill and account for the billed items as an operator and non-operator
- Determine production volumes and calculate gas imbalances
- Track a sales transaction for all products from marketing through recording revenue
- Summarize challenges unique to international and offshore operations

MATERIALS:

Supplementary materials may be provided throughout the semester.
### ASSIGNMENTS/COURSE SCHEDULE:

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<th>Topic</th>
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<td>Course Introduction &amp; An Introduction To The Petroleum Industry</td>
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<td>An Introduction To The Petroleum Industry - continued</td>
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<td>27-Jan</td>
<td>Oil &amp; Gas Reserves</td>
<td>2, 16</td>
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<td>1-Feb</td>
<td>E&amp;P Risk Management</td>
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<td>E&amp;P Risk Management - Derivatives</td>
<td>33</td>
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<tr>
<td>4</td>
<td>8-Feb</td>
<td>E&amp;P Risk Management - Derivatives</td>
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<td>10-Feb</td>
<td>Accounting Principle Overview</td>
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<td>5</td>
<td>15-Feb</td>
<td>Acquisition and Exploration Costs</td>
<td>5, 6, 7</td>
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<td>5</td>
<td>17-Feb</td>
<td>Drilling/Development and Production Costs</td>
<td>8, 9, 15</td>
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<td>22-Feb</td>
<td>Depreciation, Depletion &amp; Amortization (DD&amp;A) - SE</td>
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<td>Depreciation, Depletion &amp; Amortization (DD&amp;A) - SE</td>
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<td>7</td>
<td>1-Mar</td>
<td>Asset Retirement Obligation</td>
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<td>7</td>
<td>3-Mar</td>
<td>Revisions to ARO Estimates &amp; Apples to Apples Exam Review</td>
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<td>8-Mar</td>
<td>Exam 1</td>
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<td>Oligarchy &amp; test review</td>
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<td>15-Mar</td>
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<td>17-Mar</td>
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<td>Accounting for the Impairment of Long-Lived Assets</td>
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<td>Accounting for the Impairment of Long-Lived Assets</td>
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<td>22-Mar</td>
<td>Accounting for Joint Ventures</td>
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<tr>
<td>11</td>
<td>24-Mar</td>
<td>Marathon Oil Presentation &amp; Workshop</td>
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<td>12</td>
<td>29-Mar</td>
<td>Production &amp; Volume Measurements</td>
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<tr>
<td>12</td>
<td>31-Mar</td>
<td>Marketing Crude Oil, Natural Gas &amp; NGL</td>
<td>12</td>
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<tr>
<td>13</td>
<td>5-Apr</td>
<td>Accounting for Oil, Gas &amp; NGL Sales</td>
<td>13</td>
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<td>13</td>
<td>7-Apr</td>
<td>Accounting for Oil, Gas &amp; NGL Sales</td>
<td>13</td>
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<tr>
<td>14</td>
<td>12-Apr</td>
<td>Gas Imbalances – Producer</td>
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<tr>
<td>14</td>
<td>14-Apr</td>
<td>Gas Imbalances – Pipeline &amp; Full Cost Accounting Method</td>
<td>14 &amp; 19</td>
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<tr>
<td>15</td>
<td>19-Apr</td>
<td>International Operations and Current Topics – Qatar article review</td>
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<td>15</td>
<td>21-Apr</td>
<td>IFRS/International Operations</td>
<td>25</td>
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<td>16</td>
<td>26-Apr</td>
<td>Mini-presentation on approved topic (activity points)</td>
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<td>16</td>
<td>28-Apr</td>
<td>Mini-presentation on approved topic (activity points)</td>
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<td>17</td>
<td>3-May</td>
<td>Course review</td>
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<td>17</td>
<td>5-May</td>
<td>Reading day</td>
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<tr>
<td>18</td>
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<td>Final</td>
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IMPORTANT DATES:

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<tr>
<td>Mon., Jan. 25</td>
<td>5 p.m. Last day for adding/dropping courses for the fall semester.</td>
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<tr>
<td>Mon., Mar. 8</td>
<td>Exam 1</td>
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<td>Mon., Mar. 15-Fri., Mar. 19</td>
<td>Spring Break!</td>
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<tr>
<td>Tues., Apr. 6</td>
<td>5 p.m. Last day for all students to Q-drop courses with no penalty</td>
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<tr>
<td>Wed., May 6</td>
<td>Reading Day</td>
</tr>
<tr>
<td>Mon., May 10</td>
<td>Final 3:30-5:30 p.m.</td>
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Note: all supplementary and graded assignments will be detailed on eLearning

GRADING:
Grades will be determined from the following:

- Semester Project (3/4* assignments @ 100 points each) 300 points
- Activities (~10 points each class) 300 points
- Midterm 150 points
- Final Exam 900 points

At semester’s end, the total points accumulated by each student will earn a letter grade based on the following scale:

A: 810 points and higher
B: 720 points up to and including 809.99
C: 630 points up to and including 719.99
D: 540 points up to and including 629.99
F: below 540 points

Project:
The project will run the length of the semester and is designed to simulate the financial aspects of an upstream/integrated oil and gas company. Students will be broken-up into small groups. Each student will become an “expert” in 3 areas unique to an oil and gas company’s financial statements. Students will be responsible for completing the supporting documents and journal entry for each of their areas of responsibility. Additionally, they will have to explain the area to their team members to reinforce the group’s general understanding. Portions of the project will be completed over the course of the semester and due dates will vary based on assigned areas (two weeks after the area is covered in class).

*Graduate students will also complete a fourth project (projects will be equally distributed and still total 300 points). The fourth projects will be related to either disclosures or controls of an oil and gas company. Additionally, graduate students who have completed an audit internship can elect to audit two projects in place of completing the three additional projects. Audit internship experience is required.

See the grading rubric attached for the criteria for all projects.

Activities:
Activities primarily will be completed in class with some out of class preparation required. Grading will be based on a variety of competencies depending on the activity, but could include accuracy, participation, completion, creativity, etc. Timely feedback will be given on activity based grades (weekly).
Exams:
Examinations will consist of problem and theory questions. Exam formats will include objective response questions as well as essays and longer problems requiring development, analysis, and presentation of a comprehensive solution. While the nature of accounting is cumulative, primary emphasis will be placed upon material covered since the last exam.

While memorization is basic to learning at the most elementary level, one’s ability to analyze and formulate a problem-solving approach will be necessary for one to be completely successful on examinations. All exams will be based on the material in the textbook, any supplementary materials assigned by your professor, class discussions, and lectures. Assigned exercises and problems are intended to provide examples that allow students to develop their working skills, but they cannot represent all the problem situations one may encounter on examinations.

If you believe that there has been a grading error, it is your responsibility to notify your instructor before a week has elapsed since your exam was returned. In no case will tests be re-graded after that time.

MAKEUP EXAMINATIONS:
If an absence is excused, the student will be allowed to make up work (quizzes or examinations) within 30 calendar days from the last day of the absence. To be excused the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence, and provide appropriate documentation for the absence. In cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class. The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details (http://student-rules.tamu.edu/rule7.htm). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

Make-up exam dates and times will be determined by your professor on an individual basis.

ETHICS AND SCHOLASTIC DISHONESTY:
An Aggie does not lie, cheat, or steal or tolerate those who do

The accounting profession has a long-established reputation for its high level of ethical conduct. This reputation reaches into the academic arena where the profession's future leaders are being prepared. It follows that accounting students are expected to conduct themselves in a manner that is above reproach in their own course-related actions. Students should be familiar with Section 39 of the Student Rules available on-line. That section provides a clear and concise guide of matters involving scholastic dishonesty and the Department of Accounting fully supports and complies with those guidelines. Dishonest acts include, but are not limited to, copying, sharing, or obtaining information from any unauthorized source during examinations, quizzes, or other assignments; attempting to take credit for the intellectual creation of another person; falsifying information; giving information about a test, quiz or assignment to students in the same or other sections of the course. If you have any question about specific situations or acts that may constitute scholastic dishonesty, please talk the matter over with your professor.

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

BUILDING:
We have beautiful and state-of-the-art classrooms in the Wehner Building. We want to maintain the outstanding quality condition of these classrooms for current and future years. Thus, it is necessary for you to adhere to the firm policy of no beverages, food, or tobacco products within the Wehner classrooms. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

STUDENTS WITH DISABILITIES:
If you feel you are entitled to special accommodations because of a disability, please see your instructor within the first two weeks of the semester.

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 Disability Services, visit http://disability.tamu.edu, call 845-1637, or go to Cain Hall, Room B118.
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 
   Biochemistry & Biophysics

2. Course prefix, number and complete title of course: 
   BICH 676  Bacteriophage Biology

3. Catalog course description (not to exceed 50 words): 
   Oral presentation and discussion in the general area of the viruses of microbes and bacteria. Literature review with 
a broad scope, from basic molecular biology of phages to practical applications of microbial virus technology. 
Repeated for credit up to 12 times. Prerequisite: Approval of instructor.

4. Prerequisite(s): 
   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 12 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 Biochemistry)

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)  
----------|-----------|-------------------------------
    BICH    |   676     | Bacteriophage Biology Biology

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Approval recommended by: 
Gregory D. Fainhart  
Departmental Head - Type Name & Sign  
Date

Chair, College Review Committee  
Date

Dean of College  
Date

Dean of College  
Date

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

7 of 124 B
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  
   Biochemistry & Biophysics

2. Course prefix, number and complete title of course:  
   BICH 676 Bacteriophage Biology

3. Catalog course description (not to exceed 50 words):  
   Oral presentation and discussion in the general area of the viruses of microbes and bacteria. Sponsored by the Center for Phage Technology but not limited to students from CPT-affiliated laboratories. Students review literature with a broad scope, from basic molecular biology of phages to practical applications of microbial virus technology. Emphasis is placed on critical reading and “thinking on your feet”, rather than preparation of formal presentation materials. In general, presentations done using transparencies and without Powerpoint. Format is oriented towards whole class participation.

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)

   Ph.D. in Biochemistry

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)

   | B I C H | 6 7 6 B a c t e r i o p h a g e B i o l o g y |
   | Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code |
   | 01 | 00 | 01 | 2602100002 | 042010 | 11 | 003632 |

   Approval recommended by:  
   Gregory D. Reinhart  
   Department Head - Type Name & Sign  
   Date
   Chair, College Review Committee  
   David Wm. Reed  
   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

8 of 124 B
BICH 676- Bacteriophage Biology

Syllabus for BICH 676 - 1 credit hours
Bacteriophage Biology
Spring 2010

Class Time: Tuesday 12:30 - 1:20 pm
BioBio 203

Office Hours: By appointment

Instructor: Ry Young (5-2087), room 311A BioBio; ryland@tamu.edu

Secretary: Daisy Wilbert (5-9427), room 308 BioBio; daisy@tamu.edu

TAMU L.E.A.D.S Emergency Information: http://studentaffairs.tamu.edu/emergency

Objectives:

This Journal Club (JC) is modeled on the Beckwith-Siibavy literature class of the 1970s. The goal is to make each class an active discussion, so we will all learn something. To this end, there are some general principles:

Format
1. There will be a minimum formal media preparation. As much as possible, papers will be presented by projected transparencies of the figures and tables; transparencies will be prepared by the course secretary, Daisy Wilbert. A computer/projector will be available, with the pdf of the paper loaded, but in general we will use it only for showing figures that do not convert into transparencies well, and structures/movies. The best thing about transparencies is you can mark on them!

2. There will be Designated Presenters (DPs), usually two, for each class session. Besides being responsible for finding the paper(s) to be covered, the Designated Presenters are responsible ONLY for giving a short background, looking up methodology and, at the end, to summarize the take-home lessons. Powerpoint is optional here; whatever is easier. The expected level of effort will be to generate one or two transparencies or slides, or just write on the board. Nothing has to be memorized; you can used prepared notes for the intro and you can bring any references you want for the Methods.

3. The DPs can divide up their tasks in any way they want. The Introduction will provide necessary background and then state the question being addressed, its significance, and the system used to address the question. Important methods can be addressed at the start or at the appropriate time when they are invoked during analysis of the paper.

4. The presentation will be done jointly, by everyone else in the class that day. After the introduction (and Methods summary, if needed), a student will stand up, proceed to the front of the room and describe the first figure or table. The order of presenters will be determined by lot, done at the beginning of each session. For each section of results or
data figure/table, what we want to know is what is the question, what was the approach, what were the results, and what did it mean? Then the next person does the next table/figure, and so on. If you are called on to do this, and you don't understand something, it is better to say so rather than obfuscate or bob and weave. If this happens or the class or Instructor judges the student is not getting it right, the next person in the lot rota will stand up and give it a try. (A clue that this has happened is the classic phrase: "Sit down, cadaver breath!"). Occasionally, if several people have not succeeded, the Instructor may recruit from down the list to speed up the class. The theory is that peer pressure will and the certain knowledge of getting a grade will have everyone putting in the effort to read and understand the paper.

5. Differences between this journal club and others: Here we are not emphasizing seminar presentation skills, so practice and timing are not required. Instead, we are developing critical thinking skills, initiative, and the ability to think on your feet.

**Grading**
The instructor is there to moderate, to provide experience/expertise, etc. There will be a grade assigned which will depend on your level of participation (50%) and, of course, the quality of your efforts when it is your turn to introduce the paper and provide methodology (50%).

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<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Participation</td>
<td>50%</td>
</tr>
<tr>
<td>Paper and Methodology</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

**Attendance**
Attendance is mandatory. Each unexcused absence beyond one lowers your possible grade one letter.
Please refer to this website below:
http://student-rules.tamu.edu/rule07

**Materials**
Paper that student find to present on and transparencies

**Topics for Spring 2010**
This Journal Club is an official function of the Center for Phage Technology. Thus we will explicitly sponsor papers from both basic and applied phage biology. No later than 2 weeks before their assigned journal club session, each DP team is required to submit to the Instructor a prioritized list of papers that they wish to have chosen for the journal club and negotiate with the Instructor, and make sure that the Course Secretary is notified about the final choice of the paper, so she can put it on the Google site and prepare the transparencies. The list can have only one entry on it if you prefer, but if it gets rejected, it means that another choice has to be made immediately.
We are looking for papers with "meat" and some interesting features. Again, papers can be either basic or applied. Moreover, papers do not have to be new literature. Finally, if they are small enough, two or more papers can be combined into one journal club session.

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

The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the University Curriculum Committee by the Department of Student Life. The policy statement was forwarded to the Faculty Senate for information. 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.

**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: www.tamu.edu/aggiehonor/

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

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."
## Schedule and papers for Spring 2010

<table>
<thead>
<tr>
<th>Week #</th>
<th>Papers</th>
<th>Designated Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Organizational meeting</td>
<td>Dr. Ryland Young</td>
</tr>
<tr>
<td>Week 2</td>
<td>Discussion on Bacteriophage T4 &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 3</td>
<td>Discussion on Bacteriophage gene &amp; Supplementary Information &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 4</td>
<td>Discussion on Domain on Bacteriophages &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 5</td>
<td>Discussion on Phage Lambda DNA &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 6</td>
<td>Discussion on DNA into Liposomes by Bacteriophage lambda &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 7</td>
<td>Discussion on Phage lambda chromosomes &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 8</td>
<td>Discussion on DNA Ejection from Single Phage Particles &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 9</td>
<td><strong>Spring Break Week</strong></td>
<td><strong>Spring Break Week</strong></td>
</tr>
<tr>
<td>Week 10</td>
<td>Discussion on Liposomes by Bacteriophage lambda &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 11</td>
<td>Discussion on Injection of Phage lambda DNA &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 12</td>
<td>Discussion on Immunoglobulin-like domains on bacteriophage &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 13</td>
<td>Discussion on the DNA packaging into Bacteriophage &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 14</td>
<td>Discussion on Bacteriophage portal on package DNA &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
<tr>
<td>Week 15</td>
<td>Discussion on Liposomes during injection of lambda DNA &amp; Supplementary Information</td>
<td>Two Graduate students</td>
</tr>
</tbody>
</table>
1. This request is submitted by the Department of Chemistry.

2. Course prefix, number and complete title of course: **CHEM 616 - Organometallic Transformations for Organic Synthesis**

3. Catalog course description (not to exceed 50 words): Introduction to transition and main group metal-mediated reactions in organic synthesis; organometallic mechanisms in the context of homogeneous catalytic systems currently employed in synthetic laboratories; emphasis on the properties of transition metal complexes and their interactions with organic substrates that promote useful chemical transformations.

4. Prerequisite(s): Chem 646 recommended, but not required

5. Cross-listed with: n/a

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

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

   If yes, from ______ to ________

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

   If yes, this course may be taken ______ times.

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

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

9. M.S. or Ph.D. in Chemistry

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

---

Approval recommended by:

David H. Russell
Department Head - Type Name & Sign
Date

Chair, College Review Committee
Date

Dean of College
Date

Submitter 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

13 of 124 B
Chemistry 616 - Organometallic Transformations for Organic Synthesis

Course Objective: Introduction to transition and main group metal-mediated reactions in organic synthesis; organometallic mechanisms in the context of homogeneous catalytic systems currently employed in synthetic laboratories; emphasis on the properties of transition metal complexes and their interactions with organic substrates that promote useful chemical transformations.

Instructor: Brian Connell, Room 322, Phone 845-5746, bc@tamu.edu, Office Hours: immediately after class, by appointment (send email to setup a time), or whenever you can find me, with the exception of the mornings before lectures.

Prerequisites: Chem 646 desirable. You should have be comfortable with mechanistic “arrow-pushing.”


Reference Material: The following are useful alternative sources of information:
- Organometallic HyperTextBook <http://www.ilpi.com/organomet> by Rob Toreki
- Online Organometallics Course <http://www.chem.ox.ac.uk/icl/dermot/organomet> by Dermot O’Hare

Reading Assignments: You are expected to complete assigned readings from the textbook and other sources before each lecture.

Problem Sets: Problem sets will be due at the beginning of class on most non-exam weeks and will stress synthetic and mechanistic problem solving using the arrow-pushing formalism. The questions asked will be similar to exam questions, so you should put the appropriate effort into solving all problems. You should work alone, but you may work in groups - after you have devised your own answers. You may not copy others’ answers. Spot-grading may occur. Grades will be assigned as follows: A+ (exceptional effort), A (complete), A- (incomplete or inadequate effort), or B (nonexistent). Late problem sets will not be accepted, but your lowest score will be dropped. Problem set grades are final (no regrading).

Problem Sessions: Optional interactive sessions designed to build your problem-solving skills will be held most Weds. at 8 pm.

Project: A summary and analysis of one recent article from the primary literature. See the separate guidelines for more information.

Exams: The exams will cover material from lecture and assigned readings and will be cumulative, but will focus on recent topics. The quiz will account for 25% of Exam 1. You may request a regrade (of the entire exam) before the end of the class period immediately following the class meeting when your exam is returned.

Grading: Because performance on the final exam relative to earlier exams can dramatically improve, your grade will be calculated in two different ways, using both option #1 and option #2 shown here. The method which works to your advantage will be used to determine your final grade. If you miss an exam and do not have the appropriate documentation to demonstrate a university-excused absence, option #2 will be used to calculate your grade. Approximate grade cutoffs are as follows: >85%=A, >75%=B, >60%=C, >50%=D, <50%=F.

<table>
<thead>
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<th>Option #2</th>
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<tbody>
<tr>
<td>Exam 1 20%</td>
<td>Best Exam 20%</td>
</tr>
<tr>
<td>Exam 2 20%</td>
<td>Worst Exam 0%</td>
</tr>
<tr>
<td>Problem Sets 15%</td>
<td>Problem Sets 15%</td>
</tr>
<tr>
<td>Project 15%</td>
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<tr>
<td>Final Exam 30%</td>
<td>Final Exam 50%</td>
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<td>Total 100%</td>
<td>Total 100%</td>
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**General:** You are responsible for understanding the TAMU Student Rules (student-rules.tamu.edu) and the requirements of the Honor System (www.tamu.edu/aggiehonor). Ignorance is not an excuse. In particular, cheating and plagiarism will not be tolerated, and can result in suspension from the University. Electronic devices must be turned OFF during class. All course material is copyrighted, but you may make unaltered copies for non-profit, educational use within a university setting. The course webpage is https://elearning.tamu.edu: handouts, answer keys, last year's exams, etc. will be posted here.

**ADA Policy:** 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 a reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Cain Hall, Rm. B118 or call 845-1637.

### Schedule of Topics to be Covered and Important Deadlines

<table>
<thead>
<tr>
<th>Day</th>
<th>Topic</th>
<th>Problem Sets</th>
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<tr>
<td>1</td>
<td>Class Overview; Basic Structure &amp; Bonding</td>
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<td>2</td>
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<td>3</td>
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<td>Catalysis Principles</td>
<td>PS-2 out</td>
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<td>PS-2 due</td>
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<td>PS-4 out</td>
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<td>Cross-Coupling</td>
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<td>Cross-Coupling; <em>Exam 1, 7-10 pm</em></td>
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<td>17</td>
<td>Cross-Coupling</td>
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<tr>
<td>18</td>
<td>Cross-Coupling</td>
<td>PS-5 out</td>
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<tr>
<td>19</td>
<td>Nucleophilic Additions to Olefins</td>
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<td>20</td>
<td>pi-Allyl Chemistry</td>
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<td>pi-Allyl Chemistry</td>
<td>PS-6 out</td>
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<td>Cycloaddition</td>
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<td>PS-7 out</td>
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<td>Cycloaddition</td>
<td>PS-7 due</td>
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<td>Alkylidenes &amp; Alkylidyenes</td>
<td>PS-8 out</td>
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<td>31</td>
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<td>Carbenoids; Preferred Articles Due</td>
<td>PS-9 out</td>
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</table>
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. Request submitted by (Department or Program Name): Artie McFerrin Department of Chemical Engineering
2. Course prefix, number and complete title of course: CHEN 635 Advanced Nanostructured Materials
3. Catalog course description (not to exceed 50 words):
   Chemical synthesis and characterization of materials with structures and properties in the nano-scale; emphasis on the fundamental science and engineering of understanding and manipulating "bottom-up" material formation.

4. Prerequisite(s):
   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)
   MS and PhD in Chemical 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)
   CHEN 635 N A N O S T R U C T U R E D M A T E R I A L S

<table>
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<th>SCH</th>
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<th>Admin. Unit</th>
<th>Acad. Year</th>
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</table>

   Approval recommended by:
   Michael V. Pishko Department Head or Program Chair (Type Name & Sign) Date
   6/19/10

   Chair, College Review Committee Date
   6/16/10

   Chair, GC or OCC Date
   Mark S. Zovar

   Submitted to Coordinating Board by:

   Date Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/10

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CHEN 635 *Advanced Nanostructured Materials*

Spring 2010

**INSTRUCTOR:**

Professor: Hae-Kwon Jeong, 233 JEB, 862-4850  
E-mail: jeong@chemail.tamu.edu

Office hours: Tue 2-4pm and by appointment through email.  
Course Website: [http://vnet.tamu.edu](http://vnet.tamu.edu) (you have to log on the website and request for registration!!)

**TEXT:** No textbook is required for the course. Reading materials will be provided to enrolled students or made available in the library. Relevant reading materials can be found in the following sources (available from the Evans library):


**CREDIT, HOURS and LOCATION:** Three credit hours, 8:00 - 9:15 (Tue and Thu), JEB 112

**COURSE DESCRIPTION:** CHEN 635 introduces the chemical synthesis and characterization of materials with structures and properties in the nano-scales. Examples of the types of materials that will be covered are 0-D (nanoparticles), 1-D (nanowires), and 2-D (thin films) nanostructured materials as well as nanoporous materials (e.g., zeolites and mesoporous metal oxides). Emphasis is placed on the fundamental science of understanding and manipulating the “bottom-up” formation of these inorganic materials by polymerization, controlled precipitation, self-assembly, and controlled transport of matter and energy. The course will draw on elements of inorganic chemistry, physical chemistry, chemical kinetics, thermodynamics, transport phenomena, and interfacial engineering to provide a survey of the chemistry and engineering of advanced materials with nanostructures

**PREREQUISITES:** Approval of Instructor
COURSE OBJECTIVES: By the end of the course, you should:
- Understand the sol-gel chemistry of silica and transition metal oxides
- Know the types of forces that act between surfaces in solution
- Understand the concepts of nucleation and controlled growth of particles
- Understand self-assembly and its use for materials synthesis
- Be able to apply physical chemical and transport principles to materials synthesis
- Know the transport of molecules through the pores ranging from ultramicro to meso-scales
- Have basic understanding of the characterization techniques available for materials
- Write about and critically read others’ reports about advanced nanostructured materials

TOPICS TO BE COVERED: The following subjects will be covered in this course. The order and depth of each subject will be adjusted depending on the interests of the class.
- Reviews on the chemistry and the physics of materials
  o Atomic Structure
  o Crystallography
- Physical chemistry of solid surfaces
  o Surface energy and potential
  o Adsorption and surface modification
  o Stabilization (electrostatic and steric)
- Zero-dimensional nanostructured materials: Nanoparticles
  o Nanoparticles through homogeneous nucleation
    ▪ Fundamental nucleation and growth
    ▪ Synthesis of nanoparticles (metallic, semiconductor)
    ▪ Synthesis of oxide nanoparticles
  o Nanoparticles through heterogeneous nucleation
    ▪ Fundamentals of heterogeneous nucleation
    ▪ Synthesis of nanoparticles
  o Kinetically confined synthesis of nanoparticles
    ▪ Microemulsion
    ▪ Aerosol
    ▪ Growth termination
    ▪ Spray pyrolysis
    ▪ Template-based synthesis
- One-dimensional nanostructures: Nanowires
  o Spontaneous growth
- Evaporation (dissolution)-condensation growth
- Template-based synthesis

- Two-dimensional nanostructures: Thin films
  - Fundamentals of film growth
  - Mechanical properties of films
  - PVD vs. CVD
  - ALD
  - Self-assembly
  - Sol-gel films

- Nanoporous materials
  - Sol-gel chemistry
  - Zeolites
  - Mesoporous materials
  - Molecular transport through pores

- Survey of characterization technique

**GRADING:**

- Class attendance 10%
- Homeworks or quizzes 10%
- Midterm (in class) 30%
- Term project (written and oral) 50% (written 25% and oral 25%)

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

I will assign grades at the end of the course based on the average. Although the cutoffs will be determined based on the class distribution, the following can be guaranteed:

- A: 90-100
- B: 80-89
- C: 70-79
- D: 60-69
- F: 59 and below

**Regrading:** If you believe that a homework exercise or an exam has been graded incorrectly, see the professor within one week after the work has been handed back. Write out on a separate sheet of paper what you believe to be in error.

**Americans with Disabilities Act (ADA) Policy Statement**
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Academic Integrity Statement ✓

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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 the website: 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.

Form Instructions

1. Request submitted by (Department or Program Name): Artie McFerrin Department of Chemical Engineering
   CHEN 644 Nanotechnology: The Physics, Chemistry, and Engineering of Nanotechnology

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

3. Catalog course description (not to exceed 50 words): Introduction to the basics and tools of nanotechnology; nanotechnology approaches and algorithms to analyze, design and simulate systems; focus on developing, modifying, adapting and creating tools to solve problems in the field.

4. Prerequisite(s): approval of instructor

Cross-listed with: Stacked with:

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

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

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

   MS and PhD in Chemical 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>
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<tr>
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<th>CHEN 644 NANOTECHNOLOGY</th>
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<td>0 6 0 5 9 0 1 1 - 1</td>
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Approval recommended by:

Michael V. Piskos
Department Head or Program Chair (Type Name & Sign) Date

Chair, College Review Committee Date

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

Chair, GC or UCC Date

Submitted to Coordinating Board by:

Mark T. Zoran Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/10
NANOTECHNOLOGY CHEN-644 (3 CREDITS)

NANOTECHNOLOGY: THE PHYSICS, CHEMISTRY, AND ENGINEERING OF NANOTECHNOLOGY

Course Information

Instructor Information:

Name: Jorge M. Seminario
Research URL: http://www.che.tamu.edu/orgs/groups/Seminario/index-1.html

Course URL: http://www.che.tamu.edu/orgs/groups/Seminario/nanotechnology//index.html
Office: 239 JEB
E-mail: seminario@tamu.edu

Class room: 112 JEB

Class time:

Tuesday and Thursday 2:20-3:35 PM

Pre-requisite: approval of instructor

Introductory quantum mechanics and scientific programming will be provided as needed for specific cases. (See me or e-mail me if you have doubts)

Course Goals

The courses have two main goals:
1) To introduce all students to the basics and tools of the exciting field of nanotechnology. This includes a review of the state of the art as well as discussions of present research such that presently or after graduation the student can be ready to work in this multidisciplinary field; and
2) For students who are not working on nanotechnology: re-orient and re-tool them with nanotechnology approaches and algorithms to analyze, design, and simulate systems of their own interest or of their own research. For students already working in nanotechnology, the effort will focus on developing, modifying, adapting, and creating tools to solve specific problems in the field.

As the course is multidisciplinary, these topics are tentative and focus on the scaling-down problems as the key trigger and example for nanotechnology; solving the scaling down problems requires of a multidisciplinary effort that includes several engineering, physics, chemistry,
materials, and biology. The list of topics below will be enlarged/adapted/modified considering the most recent advances by the time the course is taught.

**Grading**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MidTerm Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Project 1</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Project 2</td>
<td></td>
</tr>
<tr>
<td>Presentation discussions</td>
<td>50%</td>
</tr>
</tbody>
</table>

The same formula is used for everyone. **No student may obtain extra credit by special arrangement.** Final grades are assigned as indicated below. I am not committed to giving a certain percentage of A's or F's to every class. The following table gives you a precise idea of your grade:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>90 to 100</td>
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<tr>
<td>B</td>
<td>80 to 89</td>
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<tr>
<td>C</td>
<td>70 to 79</td>
</tr>
<tr>
<td>D</td>
<td>60 to 69</td>
</tr>
<tr>
<td>F</td>
<td>Less than 60</td>
</tr>
</tbody>
</table>

Only presentations/reports submitted on the due date or before will be able to receive credit (no exceptions).

**Make-Up Policy**

There are **NOT make-ups**; if you have a proved emergency (properly documented and submitted to me as soon as possible, i.e., the next class you are able to attend after the emergency) that does not allow you to attend one of the presentations, you will be allowed to submit a late report/presentation. If the emergency does not allow you to report/present your work by the end of the semester and if you have a valid reason, you will be given an incomplete. If you do not have a valid emergency, you will get a zero in the assignment. There are few situations in which a make-up has to be done; if so, please provide the needed information as soon as you can.

The same rules also apply for other cases not explicitly considered as emergencies such as, jury duty, job interviews, or presentations of your research work in meetings; however for all these cases, documentation/data should be submitted in advance. Consistent with University Student Rules, students are required to notify the instructor and provide supporting information if they have a problem to attend the presentations. If no documentation is presented after one week of the end of the emergency, you will receive a zero. If the absence is planned, you will need to provide the documentation in advance.

Please send me an e-mail if you have further questions.
• 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.

The Texas A&M University Academic Integrity Statement

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

The Aggie Honor Code provides a standard of conduct in which each student promises not to lie, cheat, or steal and not to tolerate violations by others. I support the Aggie code and I assume the students do also. Remember that the honor system can be effective only if everyone supports it! For further information, please see the Academic Integrity Task Force, 2004 at http://www.tamu.edu/aggiehonor/FinalTaskForceReport.pdf. In summary, do not cheat on exams, tests, quizzes, or homework. Please spare me the difficulty of seeing those sorts of cases through the prosecution system.

Bibliography

No textbook but current journal articles in the field and lecture notes will be used as well as the following books as reference material:
Part of the classes will be based on
1) JM Seminario, Molecular and Nano Electronics, Elsevier, 2006

Other very important books:
Introduction to Mesoscopic Physics, Yoseph Imry, Oxford University Press (1997)
Molecular Electronics, James M. Tour, World Scientific; (2003)
Silicon Quantum Integrated Circuits, E. Kasper and D.J. Paul, Springer
Gaussian 2009 Information
Crystal 2009 Information
VASP 2009 Information
LAMMPS Molecular Dynamics Program information
Artificial Intelligence Methods; Monte Carlo Methods

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<tr>
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<tbody>
<tr>
<td>Tue</td>
<td>Jan19</td>
<td>Applications of nanotechnology involving:</td>
</tr>
<tr>
<td>Thu</td>
<td>Jan21</td>
<td>Traditional fields of science and engineering</td>
</tr>
<tr>
<td>Tue</td>
<td>Jan26</td>
<td>Advance society, culture, education</td>
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<td>Thu</td>
<td>Jan28</td>
<td>Health, energy,</td>
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<tr>
<td>Tue</td>
<td>Feb02</td>
<td>Nanowires</td>
</tr>
<tr>
<td>Thu</td>
<td>Feb04</td>
<td>Process to control nanotubes chirality</td>
</tr>
<tr>
<td>Tue</td>
<td>Feb09</td>
<td>Oil, gas industry</td>
</tr>
<tr>
<td>Thu</td>
<td>Feb11</td>
<td>electromechanical oscillator</td>
</tr>
<tr>
<td>Tue</td>
<td>Feb16</td>
<td>Reservoir Engineering</td>
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<tr>
<td>Thu</td>
<td>Feb18</td>
<td>Nano-Sensors; Microtubule dynamic instability</td>
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<tr>
<td>Tue</td>
<td>Feb23</td>
<td>Drug delivery through mucosal Membranes</td>
</tr>
<tr>
<td>Thu</td>
<td>Feb25</td>
<td>Biomedical sensing- biosensing</td>
</tr>
<tr>
<td>Tue</td>
<td>Mar02</td>
<td>Nano-robots</td>
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<tr>
<td>Thu</td>
<td>Mar04</td>
<td>Carbon-nanotubes</td>
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<td>Tue</td>
<td>Mar09</td>
<td>Energy, Food production &amp; sustainability</td>
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<td>Thu</td>
<td>Mar11</td>
<td>Mechano-transduction; piezoelectricity</td>
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<td>Thu</td>
<td>Mar25</td>
<td>Nanowire photonics</td>
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<tr>
<td>Tue</td>
<td>Mar30</td>
<td>Semiconductor manufacturing techniques</td>
</tr>
<tr>
<td>Thu</td>
<td>Apr01</td>
<td>Molecular circuits using NDR composites</td>
</tr>
<tr>
<td>Thu</td>
<td>Apr06</td>
<td>Solid state Chemistry</td>
</tr>
<tr>
<td>Tue</td>
<td>Apr08</td>
<td>NEMs</td>
</tr>
<tr>
<td>Thu</td>
<td>Apr13</td>
<td>Graphene</td>
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<tr>
<td>Tue</td>
<td>Apr15</td>
<td>Thermal conductivity</td>
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<tr>
<td>Thu</td>
<td>Apr20</td>
<td>Metal organic frameworks</td>
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<tr>
<td>Tue</td>
<td>Apr22</td>
<td>Quantum mechanical devices, tunnel FETs</td>
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<tr>
<td>Thu</td>
<td>Apr27</td>
<td>Nanotech applic. Mechanical</td>
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<td>Tue</td>
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<td>Thu</td>
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<td>Nanotech applic: Pharmaceuticals</td>
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<td>Tue</td>
<td>May04</td>
<td>Genomics</td>
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Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. Request submitted by (Department or Program Name): Artie McFerrin Department of Chemical Engineering

2. Course prefix, number and complete title of course:
   CHEN 653: Chemical Engineering in Tissue Engineering and Drug and Gene Delivery

3. Catalog course description (not to exceed 50 words):
   Application of chemical engineering principles to the examination of tissue engineering systems, metabolic engineering systems, drug design and delivery, and gene delivery

4. Prerequisite(s):
   Approval of instructor
   Cross-listed with: 
   Stacked with: CHEN 453

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)

MS, PhD in Chemical 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)
   ------ | -------- | ------------------------------------------
   CHEN   | 653      | TISSUE ENGINEERING

   Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code
   0 | 3 | 0 | 0 | 3 | 1 | 4 | 0 | 7 | 0 | 1 | 0 | 0 | 6 | 0 | 5 | 9 | 0 | 1 | 1 | 2 | 0 | 0 | 3 | 6 | 3 | 2

   Approval recommended by:
   Michael V. Pleshko
   Department Head or Program Chair (Type Name & Sign) Date
   Chair, College Review Committee Date

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

   Submitted to Coordinating Board by:
   Associate Director, Curricular Services

   Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
   Curricular Services – 3/10

   Chair, GC or UGC Date
   Effective Date
Chemical engineering in tissue engineering and drug and gene delivery (3 credits)

CHEN 453/653 Spring 2008
Instructor: Professor Mariah Hahn
Office: JEB 227
Phone: (979) 845-1454
mhahn@tamu.edu
Office Hours: TR 1-2 PM or by appointment
Lecture: TR 8-9:30 AM

Required Texts:
W. Mark Saltzman. Tissue Engineering: Engineering Principles for the Design of Replacement Organs and Tissues
W. Mark Saltzman. Drug Delivery: Engineering Principles for Drug Therapy

Course Description:
Chemical engineering emphasizes the study of mass transport, reaction kinetics, and fluid mechanics. These concepts are key to the analysis and design of tissue engineering systems, metabolic engineering systems, drug design and delivery, and gene delivery. This course aims to teach students to apply chemical engineering principles to the examination of these systems.

Course Objectives:
1. Apply chemical engineering concepts (mass and energy balances) to the examination of tissue engineering, drug delivery, and gene delivery.
2. Develop an appreciation for the challenges currently facing each of these fields.

Prerequisites: CHEN 203 (489) and Approval of Instructor

Grading: Point distribution
   Homework (70 points total)
   Term paper (100 points)
   Presentation on term paper (30 points)
   Exam 1 (100 points)
   Exam 2 (100 points)
   Exam 3 (100 points)
   TOTAL: 500

Tentative Grading Scale:
100 – 90  A
89 – 80  B
79 – 70  C
69 – 60  D
Below 60  F

*NOTE: This grading scale is tentative and may change.
The minimum score needed for a certain grade may decease, but will not increase.

Course Outline
- General introduction to tissue engineering, drug and gene delivery (week 1)
- General introduction to wound healing, anatomy and physiology (week 2)
- Principles of tissue engineering (weeks 3-7)
  - Objectives, basic concepts, mass transport limitations, cells as reactors, scaffold selection, evaluation
- Principles of Drug Delivery (weeks 7-9)
  - Drug administration and efficacy, diffusion in biological systems, drug permeation through biological barriers, pharmokinetics, drug delivery systems
- Principles of Gene Delivery (weeks 10-11)
  - Trafficking within the cell, delivery of genetic material to cells, gene delivery systems

Course Procedures
- Classroom Lectures: Your presence and involvement in class will help you to do well and learn. Specific reading assignments will be made in class. Handouts will also be provided in
class. Your notes from class will be a primary study tool for exams (along with reading assignments).

- **Exams:** Exams are *closed book* and *closed notes.* An equation sheet is provided. Exams are typically a combination of true/false, short answer and problem solving. The final exam is comprehensive and closed book. A request for an excused or rescheduled exam must be made at least one week before the regularly scheduled exam date (except in unavoidable situations, such as a medical emergency) and is at the discretions of the instructor.

- **Homework:**
  - Homework questions are *due one week* after being assigned. Hand in at the *beginning* of class.
  - There will be approximately 6 (or less) homework assignments. Points earned on these homework assignments will be scaled to a possible 100 points total.

- **Term Paper:**
  - **Topic:** To be assigned.
  - **Length:** minimum of 10 pages (double spaced, 12 point type, Times New Roman or equivalent, 1 inch margins, pages numbered, stapled in left hand corner)
  - **Format (in order):** (1) *Title page,* (2) *Background:* discussion of the polymeric material being studied (structure, properties, etc.), current technology or practices, (3) *Recent Advances:* summary of “cutting-edge” research on topic, (4) *Critical Analysis:* critical analysis of problems/limitations, and suggested solutions & future directions (4) *References.*
  - **Figures and/or tables:** should help the readability/clarity of the paper (not just a space filler)
  - **References:** *primarily* recent journal articles (see list for appropriate journals). You should have at least 10 references from journal articles. References should be formatted appropriately.
  - **Grading:** adherence to format, clarity, organization, technical content, and appropriately referenced.

- **Presentation:** Each student will be required to give an in-class presentation on material covered in their term paper. You will have 15 minutes for the presentation and 5 minutes for audience (and my) questions. This presentation should be done primarily with “Power Point”; however, you can digress and use the whiteboard to break-up to break the monotony or to help answer audience questions.
  - **Grading:** clarity, organization, technical content, and familiarity with your subject (i.e. ability to answer reasonable questions).
  - **Loss of points:** you must attend all days of student presentations or be deducted points from you own. Typically, I will deduct at least 10 points from your score for each day of presentations you miss. You will be required to hand in a “3-point summary” for each presenter at the end of class.

- **Regrading/Late Work:** *Requests for re-grading must be submitted within one week after the work is returned. Material returned for re-grading is subject to re-grading of entire exam/homework. Assignments may be turned in up to 1 day late (by 4 pm the day after the homework is due) for up to 50% credit, after which no credit will be given.*

- **Stacked Undergraduate/Graduate Sections:** This course may consist of an undergraduate and a graduate section. Both undergraduate and graduate students will have the same assignments. If a curve will be applied to the grades at the end of the semester then the undergraduate and the graduate sections will be curved separately. As stated above, the curve cannot increase the minimum grade required for a particular letter grade.

- **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 (disability.tamu.edu) in Room B118 of Cain Hall 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). 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/).
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. Request submitted by (Department or Program Name): Artie McFerrin Department of Chemical Engineering
2. Course prefix, number and complete title of course: CHEN 663 Systems Biology
3. Catalog course description (not to exceed 50 words):
   Introduction to experimental and computational techniques in systems biology; includes high throughput experiments, data analysis, modeling and simulation; discussion in the context of specific applications such as signal transduction.

4. Prerequisite(s):
   Approval of instructor

Cross-listed with: CHEN 463
Stacked 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. 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)
      MS and PhD in Chemical 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) | Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | HICE Code | Approval recommended by: 
---|---|---|---|---|---|---|---|---|---|---
CHEN | 663 | SYSTEMS BIOLOGY | 0 | 3 | 0 | 0 | 3 | 1 | 4 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 5 | 9 | 0 | 1 | 1 | 2 | 0 | 0 | 3 | 6 | 3 | 2 | Michael V. Fishko

Department Head or Program Chair (Type Name & Sign) Date

Chair, College Review Committee Date

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

Dean of College Date

Chair, GC or UCC Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/10

31 of 124 B
CHEN 463/663 Syllabus: Systems Biology

Department of Chemical Engineering
Texas A&M University
Jack E. Brown Building 111
TTr 9:35 – 10:50am

Dr. Juergen Hahn, Instructor
Dr. Arul Jayaraman, Instructor

1. Course description: This course is an introduction to experimental and computational techniques in system biology. This will include high throughput experiments, data analysis, modeling and simulation. The tools will be discussed in the context of specific applications such as signal transduction.

2. Homework will be assigned periodically; homework will be collected during a class period. Late homeworks receive a 50% reduction of the points if the homework is less than 24hrs late; no homeworks will be accepted more than 24hrs late except in cases of excused absences. Students who are requesting an excused absence on a day the homework is due are expected to uphold the Aggie Honor Code and Student Conduct Code.

3. Grading is based on:
   - Homeworks 30%
   - Paper presentation/discussion 20%
   - Project 50%

There is no final exam scheduled for the course.

**Tentative Grading Scale:**

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 90</td>
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<td>79 – 70</td>
<td>C</td>
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<tr>
<td>69 – 60</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>

*NOTE: This grading scale is tentative and may change. The minimum score needed for a certain grade may decrease, but will not increase.*

4. There will be several laboratory reports and computer simulations as part of the homework assignments.

5. There is no specific textbook required for this class. However, the following texts provide background information:

6. Prerequisites: CHEN 663 – Approval of instructor. CHEN 463 – CHEN 282 and approval of instructor.

7. This course may consist of an undergraduate and a graduate section. Both undergraduate and graduate students will have the same assignments. If a curve will
be applied to the grades at the end of the semester then the undergraduate and the 
g gradient sections will be curved separately. As stated above, the curve cannot increase 
the minimum grade required for a particular letter grade.

8. In accordance with departmental policy, class attendance is required. Contacting the 
    instructor or TA about questions by email is encouraged.

9. Some class notes and all the homework assignments are available on the web site.

10. 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. If you have any questions, see 
me.

11. 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 TAMU 
community from the requirements or the processes of the Honor System. For 
additional information please visit: www.tamu.edu/aggiehonor/

**Tentative Course:**

1. Introduction to systems biology (1 week)
2. Gene expression basics (1 week)
3. Signal transduction (2 weeks)
   a. Mechanisms
   b. Propagation, regulation
   c. Signaling networks and systems
4. Measurement techniques (3 weeks)
   a. Genomics
   b. Proteomics
   c. Metabolites
   d. Bioinformatics
5. Overview of modeling (1 week)
   a. Fundamental vs data driven
   b. Steady state vs dynamic
   c. Lumped parameter vs distributed
6. Data analysis techniques (1 week)
   a. Mean, variance, confidence intervals
   b. Multivariable techniques (PCA)
7. Parameter fitting from data (1 week)
8. Systematic modeling procedures (1 week)
   a. States, input, outputs, parameters
   b. Model derivation
9. Dynamic simulation of derived models (1 week)
10. First-principles model development of molecular networks (2 weeks)
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. Request submitted by (Department or Program Name): Artie McFerrin Department of Chemical Engineering

2. Course prefix, number and complete title of course: CHEN 664-Global Optimization of Chemical Engineering Problems

3. Catalog course description (not to exceed 50 words):
Advances in global optimization and applications to chemical engineering systems; modeling and formulation of optimization problems, general theories and techniques of global optimization, and applications to problems on process design and integration.

4. Prerequisite(s): Approval of instructor

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 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 Course # Title (excluding punctuation)

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<th>Admin. Unit</th>
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Approval recommended by:

Michael V. Pishko Department Head or Program Chair (Type Name & Sign) Date 5/19/10

Chair, College Review Committee Date 6/10/10

Dean of College Date 6/10/10

Chair, GC or CCC Date 6/10/10

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/10

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Spring 2006

CHEN 664
GLOBAL OPTIMIZATION OF CHEMICAL ENGINEERING PROBLEMS

Instructor: Dr. Mahmoud M. El-Halwagi, McFerrin Professor of Chemical Engineering
Office: 336D 230 Brown Hall
Phone: (979)845-3484
E-mail: El-Halwagi@TAMU.edu


Objectives: 
This course presents recent advances in global optimization and applications to chemical engineering systems. The course addresses three main aspects:
(1) Modeling and formulation of optimization problems
(2) General theories and techniques of global optimization, and
(3) Applications to problems on process design and integration

Prerequisite: Approval of instructor

Course Description: This course will cover advances in global optimization methods and their applications to chemical engineering systems. This will involve modeling and formulation of optimization problems, general theories and techniques of global optimization, and applications problems on process design and integration.

Course Outline:
I. Formulation, theory, and procedure:
1. Overview of optimization and classification of optimization problems
2. Mathematical programming and formulation of optimization problems
3. Useful concepts from logic and set theory
4. Convex analysis
5. Optimality conditions
6. Duality theory
7. Decomposition techniques
8. Branch and bound
9. Relaxation techniques
10. Interval analysis

II. Applications to chemical engineering systems:
1. Benchmarking process performance
2. Flowsheet synthesis
3. Optimization of process operation
4. Network synthesis
III. Term project:
Each student will choose a global-optimization topic pertaining to his/her area of interest and will conduct a comprehensive search on the background, theory, and techniques. Each student is to given and oral presentation and submit a written report summarizing these studies and including a project (case study, application, etc.) on the use of this topic.

Methods of Evaluation for Section (b): Homework (10%), pop quizzes (10%), midterm exam (20%), final exam (30%), project (30%).

Tentative Grading Scale:
100 - 88 A
87 - 80 B
79 - 70 C
69 - 60 D
Below 60 F

*NOTE: This grading scale is tentative and may change. The minimum score needed for a certain grade may decrease, but will not increase.

Notices:
✓ 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.

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

1. Request submitted by (Department or Program Name): Artie McFerrin Department of Chemical Engineering

2. Course prefix, number and complete title of course: CHEN 665 Sustainable Design of Chemical Processes

3. Catalog course description (not to exceed 50 words):
Sustainability in chemical engineering; includes sustainable approaches to design and development of processes, products, energy usage; issues and roles of chemical engineers, service learning

4. Prerequisite(s):
graduate and senior level in engineering or approval of instructor

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)

MS and PhD in chemical 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)

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Approval recommended by:
Michael V. Pishko
Department Head or Program Chair (Type Name & Sign) Date 6/2/10

Chair, College Review Committee Date 6/16/10

Dean of College Date 6/16/10

Chair, GC or UCC 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 – 3/10

Effective Date 37 of 124 B
Sustainable Design of Chemical Processes
CHEN465/665

Description of Course: A graduate/senior level course about sustainability in chemical engineering, specifically sustainable or green approaches to design and development of processes, products, and energy usage, discussion of issues and roles of chemical engineers. Appropriate service learning projects to be incorporated.

Course Instructors:
Dr. Mahmoud El-Halwagi (CHEN 665)
Dr. Lale Yurttas (CHEN 465)

Prerequisites:
Graduate and senior level classifications in engineering or approval of the instructor.

References:

Chemical Engineering & Sustainability

1. Sustainability
   a. Why
   b. Issues
      i. Water
      ii. Air
      iii. Climate change
      iv. Energy
      v. Policy
   c. Benefits
   d. Role of Chemical Engineers
   e. Sustainability metrics

2. Chemical Process Design, Performance Evaluation and Improvement
   a. What is sustainable design?
   b. Roles of process analysis/simulation and synthesis in sustainable design
   c. Process optimization tools
   d. Benchmarking (targeting) of process performance and environmental impact
   e. Process integration for conservation of natural resources
   f. Separation networks for cleaner production

3. Sustainable Energy
   a. Overview of current energy resources and technologies
   b. Emerging technologies of the future
   c. Renewable and non-renewable energy generation, storage, and consumption
   d. Short and long term technologies that may impact the chemical process industries
4. Macroscopic Issue
   a. Life Cycle Assessment (LCA)
   b. Environmental Impact Assessment (EIA)
   c. Water quality modeling and atmospheric modeling

5. Term project: Biofuels: sources, processing, life cycle, and techno-economic-environmental analysis.

Learning Objectives:
By the end of this course the students will be able to
- Define and describe the issues of sustainability ranging from local to global.
- Identify environmental strengths and weaknesses of current and future energy technologies.
- Define and analyze interactions between technical and non-technical issues, impacts on society and business.
- Discuss the role of chemical engineers in addressing the issues of sustainability.
- Demonstrate engineering skills and knowledge in a real world environment through service-learning projects.
- Identify impact of process industries on the environmental and potential benchmarking techniques for environment
- Relate and reconcile economic, environmental, and technical issues

Pedagogy:
- In addition to lectures, opportunities will be provided to broaden student perspective on contemporary societal issues by inviting guest lecturers, incorporating outside reading material and providing discussion opportunities.
- Service-learning projects will allow students to work on real world problems with unexpected challenges and constraints. Students will be able to learn from their successes or failures and also learn teamwork, communication, and project management, much needed skills for their engineering careers.

Tentative Course Outline by Major Topics and Approximate Time for Each:

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</table>
Policies and Procedures:

Grading: Homework (10%), Two unannounced (pop) quizzes (10%), Research assignments, reports, and presentations (10%), Term Project (15%), Midterm exam (25%), Final exam (30%)

Tentative Grading Scale:
100 – 88 A
87 – 80 B
79 – 70 C
69 – 60 D
Below 60 F

*NOTE: This grading scale is tentative and may change. The minimum score needed for a certain grade may decrease, but will not increase.

Attendance: Class attendance is important for this course (also, remember, there are unannounced quizzes). A student with a documented excused absence will be allowed to make up missed work in accordance with the Student Rules. The rules of excused absence can be found at http://student-rules.tamu.edu/rule7.htm. It is the student’s responsibility to provide to the instructor satisfactory evidence of excused absence.

Email: class updates and frequent announcements regarding class meetings, homework, and exams will be transmitted via email. You are responsible for checking your Neo email account on a regular basis.

✓ Disabled Students: 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.

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

1. Request submitted by *(Department or Program Name)*: Arte McFerrin Department of Chemical Engineering

2. Course prefix, number and complete title of course: CHEN 677 Advanced Process Integration and Synthesis

3. Catalog course description (not to exceed 50 words):
   Systematic and state-of-the-art techniques of understanding the global insights of mass and energy flows within a process; use of integrated insights to optimize process performance; includes a variety of mathematical and visualization tools.

4. Prerequisite(s): Approval of instructor

   Cross-listed with:  
   Stacked 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)*

   MS and PhD in Chemical 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)
   CHEN  677  ADVANCED PROCESS INTEGRATION

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   Approval recommended by: Michael V. Pishko (Chair, Program Chair) 5/19/10

   Date

   Chair, College Review Committee

   Date

   Department Chair (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 – 3/10

41 of 124 B
ADVANCED PROCESS INTEGRATION AND SYNTHESIS
CHEN 677

Instructor: Mahmoud M. El-Halwagi
Office: 230 Brown Hall
Phone: (979)845-3484
Fax: (979)845-4664
E-mail: El-Halwagi@TAMU.edu

Catalog Course Description: The course presents systematic and state-of-the-art techniques for understanding the global insights of mass and energy flows within a process and how these integrated insights can be used to optimize process performance. A variety of mathematical and visualization tools are presented.


Prerequisites: Approval of instructor

Course Outline:
Each of the following topics will be covered in one week (3 lectures) of classes:
1. Overview of process integration, synthesis, simulation and optimization.
2. Formulation and solution of optimization problems
3. Targeting for mass integration
4. Graphical mass integration techniques
5. Synthesis of mass exchange networks: graphical and algebraic approaches
7. Optimization-based mass-integration techniques
8. Synthesis of heat-exchange networks
9. Synthesis of reactive mass exchange networks
10. Design of cogeneration systems
11. Nonideal separation systems
12. Reaction systems
13. Property Integration
14. Molecular design
15. Design of integrated biorefineries
16. Integration of solar systems with industrial facilities
17. Design for sustainability
18. Putting it all together

Methods of Evaluation:
Homework (10%), pop quizzes (10%), final exam (30%), and term projects (50%).

Tentative Grading Scale:
American with Disabilities Act 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.

Scholastic Dishonesty
As commonly defined, plagiarism consists of passing off one’s own ideas, work, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty”.

Academic Integrity Statement and Policy
"An Aggie does not lie, cheat or steal, or tolerate those who do." For additional information, please visit: http://www.tamu.edu/aggichonor
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. Request submitted by (Department or Program Name): Mathematics
2. Course prefix, number and complete title of course: MATH 638 Hyperbolic Conservation Laws
3. Catalog course description (not to exceed 50 words):
Introduction to basic theory and numerical methods for first order nonlinear partial differential equations; basic existence-uniqueness theory for scalar conservation laws; special equations and systems of interest in various applications and Riemann problem solutions for such systems; design of numerical methods for general hyperbolic systems; stability and convergence properties of numerical methods.

4. Prerequisite(s):
MATH 612 or MATH 610 or instructor’s approval

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)

PhD in Mathematics

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)

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Approval recommended by:

Albert Bojossi
Department Head or Program Chair (Type Name & Sign) Date

Chair, College Review Committee Date

Dean of College Date

Chair, GC or UGC Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/10
44 of 124 B
Math 638, Hyperbolic Conservation Laws  
(Spring 2011)

Instructor: Bojan Popov  
Office: Blocker 608J  
Email: popov@math.tamu.edu  
Phone: 845-1989


Prerequisites: Math 612 or Math 610, or Instructor's approval.

Course topic and weekly schedule: This is a course for graduate students who are interested in nonlinear first order PDEs and their applications. I will cover: (i) basic existence-uniqueness theory for scalar conservation laws in weeks 1–4; (ii) special equations/systems of interest for various application and Riemann problems for such systems in weeks 5–9; (iii) stability of viscous perturbations and first order numerical methods in weeks 10–14. There will be no required book for the class but LeVeque's book above is a good reference. I will also use lecture notes, research papers and the following references:

1. Lawrence C. Evans, Partial Differential Equations (Graduate Studies in Mathematics, V. 19) GSM/19.


Upon completion of the course, students will understand the basic theory of nonlinear conservation laws and should be capable to design and program a simple numerical methods for a general hyperbolic system of conservation laws.

Evaluation: Due to the wide range of applications, this course should be of interests to students in aerospace and atmospherics sciences, and also nuclear engineering, etc. Therefore, formal, in class theoretical exams are not appropriate for this class. I will give a midterm and a final exam assignments.

Grading: A total score of 90% or more guarantees an A, a score of 80% or more a B, 70% or more a C, 60% or more a D.

Midterm due in week 7 (exam or project): 50%, Final exam (exam or project): 50%.

Make-Up Policy: Make-ups for exams will only be given with documented University-approved excuses (see University Regulations). Consistent with University Student Rules, students are required to notify an instructor by the end of the second working day after missing an exam. Otherwise, they forfeit their rights to a make-up.

Scholastic Dishonesty: Students may work together and discuss the homework problems with each other. Copying work done by others is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy. For more information on university policies regarding scholastic dishonesty, see University Student Rules.


Copyright Policy: All printed hand-outs and web materials are protected by US Copyright Laws. No multiple copies can be made without written permission by the instructor.

Students with Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information 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 658 Fundamentals of Ceramics

3. Catalog course description (not to exceed 50 words): Atomic bonding, crystalline and glassy structure; phase equilibria and ceramic reactions; mechanical, electrical, thermal, dielectric, magnetic, and optical properties; ceramic processing.

4. Prerequisite(s): MEEN 222 or equivalent

Cross-listed with: MSEN 658

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.Eng., Ph.D. in MEEN, MSEN, AERO, CHEN, PHYS, CHEM

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)
   MEEN 658 Fundamentals of Ceramics

   Lect. Lab SCII CIP and Fund Code Admin. Unit Acad. Year FICE Code
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Approval recommended by:

Sai Lau
Department Head - Type Name & Sign 4/20/2010

Ibrahim Karaman
Department Head - Type Name & Sign 04/20/2010
(if cross-listed course)

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Chair, College Review Committee

Dean of College

Dean of College

Date

Date

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
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 Fundamentals of Ceramics

3. Catalog course description (not to exceed 50 words): Atomic bonding; crystalline and glassy structure; phase equilibria and ceramic reactions; mechanical, electrical, thermal, dielectric, magnetic, and optical properties; ceramic processing.

4. Prerequisite(s): MEEN 222 or equivalent
Cross-listed with: MSEN 656

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., M.Eng., Ph.D. in MEEN, MSEN, AERO, CHEN, PHYS, CHEM

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) 

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Approval recommended by:
Sai Lau
Department Head - Type Name & Sign
Date 3/12/2010

Ibrahim Karaman
Department Head - Type Name & Sign (if cross-listed course)
Date 03/12/2010

Submitted to Coordinating Board by:
Associate Director, Curricular Services
Sandra Williams

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/09
**MSEN/MEEN 658 (Fall 2010)**

**Fundamentals of Ceramics**

<table>
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<tr>
<th>Instructor:</th>
<th>Miladin Radovic</th>
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<tbody>
<tr>
<td>E-mail:</td>
<td><a href="mailto:mradovic@tamu.edu">mradovic@tamu.edu</a></td>
</tr>
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**Phone:** (979) 845-5114  
**Office:** 127 ENPH

**Description:**
Atomic bonding; crystalline and glassy structures; phase equilibria and ceramic reactions; mechanical, electrical, thermal, dielectric, magnetic, and optical properties; and ceramic processing.

**Class credits** 3-0

**Prerequisites:** MEEN 222 or instructor approval

**Textbook:**

**Learning outcomes:**
At the end of the semester, you will be able to:
- **Recognize** basic structures of ceramics and glass;
- **Correlate** processing conditions to the structures of ceramics and glass;
- **Correlate** properties of ceramics and glasses to their structure;
- **Select** ceramic materials for different applications;
- **Design** components from ceramics and glasses

**Assessment and Evaluation:**
- The fundamentals of ceramic structure and properties will be studied and discussed during lectures. Notes will be provided, and the textbook can be used for further reference. Knowledge of the different structures, properties, and processing methods will be evaluated through exams.
- The analysis of a program will be achieved by completion of homework sets and evaluated through quizzes and exams. To be able to solve the homework, the student needs to understand the theory covered in classes, implement different theories, solve the problem, analyze the results, etc.
- The final step in the assessment is the project, where students are expected to demonstrate the ability to learn, understand, and present topics not covered in the course.

**Grading Policy**

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10 minutes of class time. Each quiz will cover a learning unit

80-minute exam

Comprehensive exam. Date according to Registrar schedule

The final weighted average of each student will be calculated based on the indicated grade distribution. The letter grade will be assigned by the following criterion:

A>= 90; 80=< B < 90; 70 =< C < 80; 60 =< D <70; F=<60

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

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

- At any time during the semester, you will be able to know how many points you have accumulated.
- The criteria for assigning final grades have been clearly outlined above. Those criteria are final.
- If you are 1 point (or less) away from the next grade up, please answer the following before asking me to reconsider your grade.
  - Do you have an upward trend in your grades (i.e., have you improved your performance over the semester?) or have you at least been consistent?
  - Have you taken at least 75% of the quizzes?
  - **In short: the final grade may be reconsidered only for students who did their best and showed improvement during the course.**
- Examples
  - You have 79.9 and you did not submit a project for extra credit. **Your final grade is C.**
  - You have 69.9 percent and you did not take three or more quizzes. **Your final grade is D.**
  - You have 89.9 and your grade for Exam 1 was 100, while your grade for Exam 2 was 60. **Your final grade is B.**
  - You have 89.9 and your project is excellent. **Your final grade may be an A**
  - You have 89.9 and you submitted a program for extra credit. In addition, your grade for Exam 1 was 40, while your grade for Final exam was 100. **Your final grade is an A.**

**Guidelines**

**Quizzes**

- The set of problems/questions from the textbook will be assigned at the end of each class. One or two problems/questions from the assigned set will be on the quiz.
- Please do not bring solves problems and/or answers to the instructor or teaching assistant.
- Note sheets and books are not allowed during the quizzes.
- There will be a quiz at the beginning of the class. The quizzes are to be answered within the time limit (usually 10 minutes) set by the instructor.
- Graded quizzes will be circulated for pick-up in class.
- To satisfy FERPA requirements, the students must sign a grade release form or inform the instructor if they wish to pick up graded quizzes in any other form.
- Solutions to the homework problems/questions will be posted online after the quiz.
- If homework is to be discussed during office hours, it is required that at least a rough effort is presented to the instructor.
- Missed quizzes require a written University excuse; otherwise, a zero will be assigned.

**Examination**

- There will be two midterm examinations and a comprehensive final exam.
- The use of texts, problem solutions, or problem sets or notes during the examination period is not permitted.
- Note sheets and books are not allowed during the exams.
- The final exam will be cumulative and scheduled in the final exam period.
- Graded exams will be circulated for pick up in class.
- To satisfy FERPA requirements, the students must sign a grade release form or inform the instructor if they wish to pick up graded quizzes in any other form.
- Missed quizzes require a written University excuse; otherwise, a zero will be assigned.
Grading disputes

- If you wish to dispute the grading of quizzes, first contact the grade and explain the problem. If you are not able to resolve the problem with the grader, then please approach the instructor within one week of the paper being handed back to the class; thereafter, the grade will not be changed.
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- "University-Approved Absences" are for activities formally scheduled with the Department of Student Activities (see: 7. Attendance, http://student-rules.tamu.edu). There are two kinds of activities: Authorized Activities (associated with classes), and Sponsored Activities (generally student organization activities).
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- In accordance with recent changes to Rule 7, please be aware that in this class any "injury or illness that is too severe or contagious for the student to attend class" will require "a medical confirmation note from his or her medical provider" even if the absence is for less than 3 days.

Academic Misconduct:

- Academic misconduct (see http://www.tamu.edu/aggiehonor/acadmisconduct.htm for definitions) will not be tolerated.
- Academic misconduct will be dealt with according to University Regulations.
- Academic misconduct in ANY Quiz, Homework or Exam will automatically imply a grade reduction of 30 points.
- A second violation receives an F* in the course and an "Honor Violation Probation"
- Academic misconduct in the extra credit group project means an automatic F* in the course and an "Honor Violation Probation".

Academic Integrity Statement and Policy

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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. Conduct contradicting this policy will be punished according to the current rules and regulation.

The following statement should be printed and signed on all assignments and examination cover pages:

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
“On my honor as an Aggie, I have neither given nor received unauthorized aid on this academic work:

______________________________
Signature of student

### 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.
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| 10   | Creep, Subcritical Crack Growth, and Fatigue, Chapter 12 |  |
| 11   | Thermal Properties, Chapter 13 |  |
| 12   | Magnetic and Dielectric Properties, Chapters 14 and 15 |  |
| 13   | Optical Properties, Chapter 16  
Review for Exam 2 |  |
| 14   | Exam #2, Lectures 14–26  
Presentations | Exam 2 |
| 15   | Final Exam (all lectures) |  |
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 Materials Science and Engineering

2. Course prefix, number and complete title of course: MSEN 658 Fundamentals of Ceramics

3. Catalog course description (not to exceed 50 words): Atomic bonding; crystalline and glassy structure; phase equilibria and ceramic reactions; mechanical, electrical, thermal, dielectric, magnetic, and optical properties; ceramic processing.

4. Prerequisite(s): MEEN 222 or equivalent or instructor approval

Cross-listed with: MEEN 658

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.Eng., Ph.D. in MEEN, MSEN, AERO, CHEN, PHYS, CHEM

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>MS</th>
<th>EN</th>
<th>6</th>
<th>5</th>
<th>8</th>
<th>FUNDAMENTALS OF CERAMICS</th>
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<td>CIP and Fund Code</td>
<td>Admin. Unit</td>
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<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Approval recommended by:

Ibrahim Karanam 04/20/2010
Department Head - Type Name & Sign Date

Sai Lau 4/20/2010
Department Head - Type Name & Sign (if cross-listed course) Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Chair, College Review Committee Date

Dean of College Date

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

53 of 124 B
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 Materials Science and Engineering

2. Course prefix, number and complete title of course: **MSEN 656 Fundamentals of Ceramics**

3. Catalog course description (not to exceed 50 words): Atomic bonding; crystalline and glassy structure; phase equilibria and ceramic reactions; mechanical, electrical, thermal, dielectric, magnetic, and optical properties; ceramic processing.

4. Prerequisite(s): MEEN 222 or equivalent or instructor approval

   Cross-listed with: MEEN 656

   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)

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   M.S., M.Eng., Ph.D. in MEEN, MSEN, AERO, CHEN, PHYS, CHEM

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)
    
    MSEN 656  Fundamentals of Ceramics

   Lect.  Lab  SCH  CIP and Fund Code  Admin. Unit  Acad. Year  FICE Code
   0  3  0  0  0  3  1  4  0  6  0  1  0  0  0  6  0  5  9  0  1  1  -  1  2  0  0  3  6  3  2

   Approval recommended by:

   Ibrahim Karaman  03/12/2010
   Department Head - Type Name & Sign  Date

   Sai Lau  3/12/2010
   Department Head - Type Name & Sign (if cross-listed course)

   Submitted to Coordinating Board by:

   Associate Director, Curricular Services
   Sandra Williams

   Chair, College Review Committee
   3-22-10
   Date

   Dean of College
   Robin L. Autenrieth
   3-22-10
   Date

   Dean of College
   David W. Reed
   6 May 2010
   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
**MSEN/MEEN 658 (Fall 2010)**

**Fundamentals of Ceramics**

**Instructor:** Miladin Radovic  
**E-mail:** mradovic@tamu.edu  
**Office hours:** TBA  
**Phone:** (979) 845-5114  
**Office:** 127 ENPH  
**TA:** TBA  
**E-mail:** TBA  
**Class schedule:** TBA  
**Classroom:** TBA

**Description:**  
Atomic bonding; crystalline and glassy structures; phase equilibria and ceramic reactions; mechanical, electrical, thermal, dielectric, magnetic, and optical properties; and ceramic processing.

**Class credits:** 3-0  
**Prerequisites:** MEEN 222 or instructor approval

**Textbook:**  

**Learning outcomes:**

At the end of the semester, you will be able to:

- **Recognize** basic structures of ceramics and glass;
- **Correlate** processing conditions to the structures of ceramics and glass;
- **Correlate** properties of ceramics and glasses to their structure;
- **Select** ceramic materials for different applications;
- **Design** components from ceramics and glasses

**Assessment and Evaluation:**

- The fundamentals of ceramic structure and properties will be studied and discussed during lectures. Notes will be provided, and the textbook can be used for further reference. Knowledge of the different structures, properties, and processing methods will be evaluated through exams.
- The analysis of a program will be achieved by completion of homework sets and evaluated through quizzes and exams. To be able to solve the homework, the student needs to understand the theory covered in classes, implement different theories, solve the problem, analyze the results, etc.
- The final step in the assessment is the project, where students are expected to demonstrate the ability to learn, understand, and present topics not covered in the course.

**Grading Policy**

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>20</td>
<td>10 minutes of class time. Each quiz will cover a learning unit</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20</td>
<td>80-minute exam</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20</td>
<td>80-minute exam</td>
</tr>
<tr>
<td>Final exam</td>
<td>25</td>
<td>Comprehensive exam. Date according to Registrar schedule</td>
</tr>
<tr>
<td>Project</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>105</td>
<td></td>
</tr>
</tbody>
</table>

The final weighted average of each student will be calculated based on the indicated grade distribution. The letter grade will be assigned by the following criterion:

\[
\text{A} \geq 90; \quad 80 \leq B < 90; \quad 70 \leq C < 80; \quad 60 \leq D < 70; \quad F \leq 60
\]

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

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

Curricular Services – 3/09

55 of 124
### Final Grade

- At any time during the semester, you will be able to know how many points you have accumulated.
- The criteria for assigning final grades have been clearly outlined above. Those criteria are final.
- If you are 1 point (or less) away from the next grade up, please answer the following before asking me to reconsider your grade.
  - Do you have an upward trend in your grades (i.e., have you improved your performance over the semester?) or have you at least been consistent?
  - Have you taken at least 75% of the quizzes?
  - **In short: the final grade may be reconsidered only for students who did their best and showed improvement during the course**

#### Examples

- You have 79.9 and you did not submit a project for extra credit. **Your final grade is C.**
- You have 69.9 percent and you did not take three or more quizzes. **Your final grade is D.**
- You have 89.9 and your grade for Exam 1 was 100, while your grade for Exam 2 was 60. **Your final grade is B.**
- You have 89.9 and your project is excellent. **Your final grade may be an A**
- You have 89.9 and you submitted a program for extra credit. In addition, your grade for Exam 1 was 40, while your grade for Final exam was 100. **Your final grade is an A.**

### Guidelines

#### Quizzes

- The set of problems/questions from the textbook will be assigned at the end of each class. One or two problems/questions from the assigned set will be on the quiz.
- Please do not bring solves problems and/or answers to the instructor or teaching assistant.
- Note sheets and books are not allowed during the quizzes.
- There will be a quiz at the beginning of the class. The quizzes are to be answered within the time limit (usually 10 minutes) set by the instructor.
- Graded quizzes will be circulated for pick-up in class.
- To satisfy FERPA requirements, the students must sign a grade release form or inform the instructor if they wish to pick up graded quizzes in any other form.
- Solutions to the homework problems/questions will be posted online after the quiz.
- If homework is to be discussed during office hours, it is required that at least a rough effort is presented to the instructor.
- Missed quizzes require a written University excuse; otherwise, a zero will be assigned.

#### Examination

- There will be two midterm examinations and a comprehensive final exam.
- The use of texts, problem solutions, or problem sets or notes during the examination period is not permitted.
- Note sheets and books are not allowed during the exams.
- The final exam will be cumulative and scheduled in the final exam period.
- Graded exams will be circulated for pick up in class.
- To satisfy FERPA requirements, the students must sign a grade release form or inform the instructor if they wish to pick up graded quizzes in any other form.
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Grading disputes

- If you wish to dispute the grading of quizzes, first contact the grade and explain the problem. If you are not able to resolve the problem with the grader, then please approach the instructor within one week of the paper being handed back to the class; thereafter, the grade will not be changed.
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“On my honor as an Aggie, I have neither given nor received unauthorized aid on this academic work:

________________________
Signature of student

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| 13   | Optical Properties, Chapter 16  
Review for Exam 2 |  
| 14   | Exam #2, Lectures 14–26  
Presentations | Exam 2 |
| 15   | Final Exam (all lectures) |  

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:
   Plant Pathology & Microbiology

2. Course prefix, number and complete title of course:
   PLPA 630 Fungi: Physiology and Genetics

3. Catalog course description (not to exceed 50 words):
   Exploration of genetic networks, and genome evolution; physiology of fungal development and plant pathogenesis

4. Prerequisite(s):
   Graduate classification or approval of instructor and concurrent enrollment in PLPA 631 Fungi Laboratory 1 credit

   Cross-listed with:
   None

   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)

   No
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

   PLPA, BIOL, BI CH, HORT and SCSC

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)

   PLPA  630  Fungi Physiology and Genetics

<table>
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<tr>
<th>Lect.</th>
<th>Lab</th>
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<th>Admin. Unit</th>
<th>Acad. Year</th>
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</table>

   Approval recommended by:
   Department Head - Type Name & Sign
   Leland Pierson  Date

   Chair, College Review Committee
   Date

   Department Head - Type Name & Sign
   (if cross-listed course)
   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
Fungi: Physiology and Genetics  
PLPA 630  
Fall Semester, 2010  
M/F 9:10 – 10:00 Room 208 Peterson  
2 credit hours

**Description:**  
Exploration of genetic networks, and genome evolution; physiology of fungal development and plant pathogenesis

**Prerequisites:** Graduate classification or approval of instructor and concurrent enrollment in PLPA 631 Fungi Laboratory 1 credit

**Course Objectives:** Course Objectives: This course is designed to introduce advanced students to fungal physiology, genetics and genomics. Topics include fungal genome structure and evolution, metabolism, environmental sensing, reproduction, and pathogenesis. Students will actively participate in analysis of current topics through class discussion. Students will develop their writing and critical thinking skills by reviewing scientific writings relevant to the course.

**Key Course Learning Outcomes**
1. You will understand key features of fungal genomes and genome evolution.  
2. You will gain an understanding of techniques used to explore the function of fungal genomes.  
3. You will interpret current models explaining evolution of transcriptional circuitry.  
4. You will understand the roles of fungal secondary metabolism and host adaptation.  
5. You will understand the form and function in development and plant disease.  
6. You will gain a strong foundation in key areas of knowledge in fungal physiology.  
7. You will refine your science writing skills through critique of scientific writing.

**Instructor:** Dr. Daniel Ebbole  
Department of Plant Pathology and Microbiology  
321B Peterson Bldg  
979-845-4831  
d-ebbole@tamu.edu

**Office Hours:**  
Wed. 1:00 – 3:00 Room 321B Peterson

**Textbook:**  
None: Contemporary literature and supplementary material will be assigned and distributed electronically by the instructor.
Grading:

Grading Policy
- Exam 1 (Gene expression and metabolism) 20%
- Exam 2 (Environmental sensing and development) 25%
- Exam 3 (Fungal Pathogenesis) 25%
- Manuscript review assignment 20%
- Participation 10%

Total 100%

Grade Scale:
- 90-100% A
- 80-89% B
- 70-79% C
- 60-69% D
- 59 and below F

Exams: Three exams will be given that will account for 70% of your grade.
- Exam #1 (20%) In class
- Exam #2 (25%) In class
- Exam #3 (25%) Final exam

Class Attendance:
Students are expected to attend class unless satisfactory evidence is presented to substantiate the reason for absence [link]

Regrades:
Regrade requests must be made in writing no later than one week after the exam/paper is handed back. The entire exam/paper will be subject to regrade, not just a specific problem. No regrades will be accepted after that time.

Class Projects:
1) Participation (10% of grade). Literature discussion will constitute a major portion of lecture time. Participation of all students in these discussions is mandatory. I will make literature available at least one class period before it is discussed. It is expected that all students will have read the papers prior to class and will come prepared to discuss.

2) Manuscript Review Assignment (20% of grade). Each student will be assigned two manuscripts to analyze by the instructor the week of Nov. 7. Students will act as an outside reviewer for one of the manuscripts and a journal editor on their second assigned manuscript. Written reviews will be turned in to the instructor on or before Nov. 21. The instructor will then assign three “outside reviews” to a student on Nov. 24. This student will act as the editor and write a summary to the authors of the manuscript including their view on any changes that are necessary for the manuscript to be acceptable for publication. The grade will be based on the quality of the review of the assigned manuscript (10%) and the letter to the authors written by the student acting as the editor (10%).

Lecture Schedule flexibility
Coverage of the lectures topics listed below represents an ambitious goal. Discussion of topics in the classroom is encouraged to improve student learning. Extensive discussion in class is expected to expand the time needed to fully explore particular topics. It is expected that one or more topics listed in the course syllabus will be not be covered in depth to account for the additional time spent in discussion.

**Class Schedule:**

<table>
<thead>
<tr>
<th>Lecture Period</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td><strong>Signaling and evolution of fungal signal transduction in sexual development</strong></td>
</tr>
<tr>
<td>Week 1</td>
<td>Definition of the fungi and an introduction to fungal genomes.</td>
</tr>
<tr>
<td>Week 2</td>
<td>Fungal genome structure and evolution</td>
</tr>
<tr>
<td>Week 2</td>
<td>Gene duplication, RIP, genome defense.</td>
</tr>
<tr>
<td>Week 3</td>
<td>The yeast pheromone response as a molecular model of signaling.</td>
</tr>
<tr>
<td>Week 3</td>
<td>Levels of conservation in signaling in the Ascomycete mating pathway.</td>
</tr>
<tr>
<td>Week 3</td>
<td>Divergence in signal transduction pathways in mating behavior: molecular evolution</td>
</tr>
<tr>
<td>Week 4</td>
<td>Development in pathogenesis I: <em>Ustilago maydis.</em></td>
</tr>
<tr>
<td>Week 4</td>
<td>Genetic control of <em>Ustilago maydis</em> mating.</td>
</tr>
<tr>
<td>Week 4</td>
<td>Genetic control <em>Ustilago maydis</em> filamentation and <em>in planta</em> development.</td>
</tr>
<tr>
<td>Week 5</td>
<td>Exam I – Lectures 1-7</td>
</tr>
<tr>
<td>Week 5</td>
<td>Development in pathogenesis II: <em>Magnaporthe grisea.</em></td>
</tr>
<tr>
<td>Week 6</td>
<td>The appressorium: form and function.</td>
</tr>
<tr>
<td>Week 6</td>
<td>Molecular genetics of appressorium development.</td>
</tr>
<tr>
<td>Week 6</td>
<td>Growth of <em>Magnaporthe</em> in planta and cell-to-cell movement</td>
</tr>
<tr>
<td>Week 7</td>
<td>Protein effectors of fungal pathogens</td>
</tr>
<tr>
<td>Week 7</td>
<td><strong>Signaling and evolution of fungal signal transduction in asexual development</strong></td>
</tr>
<tr>
<td>Week 8</td>
<td>Genetic control of conidial form and function in <em>Aspergillus</em></td>
</tr>
<tr>
<td>Week 8</td>
<td>Molecular genetics of conidiation in <em>Aspergillus</em></td>
</tr>
<tr>
<td>Week 8</td>
<td>Conidiation in <em>Neurospora</em> and other fungi</td>
</tr>
<tr>
<td>Week 9</td>
<td>Models for evolution of regulatory genes in the Ascomycete lineages.</td>
</tr>
<tr>
<td>Week 9</td>
<td>Environmental sensing and physiological response:</td>
</tr>
<tr>
<td>Week 9</td>
<td>Carbon catabolite repression</td>
</tr>
<tr>
<td>Week 10</td>
<td>Exam II</td>
</tr>
<tr>
<td>Week 10</td>
<td>pH sensing</td>
</tr>
<tr>
<td>Week 10</td>
<td>Assign manuscript review</td>
</tr>
<tr>
<td>Week 10</td>
<td>Glucose sensing and sugar transport.</td>
</tr>
<tr>
<td>Week 11</td>
<td>Nitrogen</td>
</tr>
<tr>
<td>Week 11</td>
<td>Sulfur, and phophorus</td>
</tr>
<tr>
<td>Week 12</td>
<td>Cross-Pathway Control of amino acid biosynthesis</td>
</tr>
<tr>
<td>Week 12</td>
<td>Deconstruction of plant cell walls and utilization of breakdown</td>
</tr>
<tr>
<td>Week 13</td>
<td>Secondary metabolism: Part 1</td>
</tr>
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<td>--------</td>
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</tr>
<tr>
<td>Week 13</td>
<td><strong>THANKSGIVING</strong></td>
</tr>
<tr>
<td>Week 14</td>
<td>Secondary metabolism, gene clusters, and genome evolution revisited: Part 2</td>
</tr>
<tr>
<td>Week 14</td>
<td><strong>Final Exam</strong></td>
</tr>
<tr>
<td>Week 15</td>
<td></td>
</tr>
</tbody>
</table>

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17 February 2010

Dr. Charles M. Kennerly, Professor and Associate Head
Department of Plant Pathology and Microbiology
2132 TAMU
College Station, TX 77843-2132

Dear Chuck,

The Department of Biology has no objection to the three new graduate courses proposed by your department, PLPA 630 Fungi: Physiology and Genetics, PLPA 631 Fungi Laboratory, PLPA 632 Fungi Cell Biology and Taxonomy, as long as these courses are not used to block the Department of Biology from offering non-overlapping mycology courses in the future.

Good luck with the approval process.

Sincerely,

[Signature]

Thomas D. McKnight
Professor and Associate Head of Biology
1. This request is submitted by the Department of Plant Pathology & Microbiology.

2. Course prefix, number and complete title of course: PLPA 631, Fungi Laboratory

3. Catalog course description (not to exceed 50 words): Demonstration of key modern concepts in Kingdom Fungi; Experiments with current research methodologies using fungi

4. Prerequisite(s): Graduate classification or approval of instructor and concurrent enrollment in PLPA 631 Fungi: Cell Biology and Taxonomy and/or PLPA 630 Fungi: Genetics and Physiology 2 credits each.

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)
      ☐ No
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
      PLPA, BIOL, BICH, HORT, SCSC

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></th>
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<tbody>
<tr>
<td>PLPA</td>
<td>631</td>
<td>Fungi Laboratory</td>
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</tbody>
</table>

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<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>
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<tbody>
<tr>
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<td>3</td>
<td>01260506060223181</td>
<td>10 - 11</td>
<td>003632</td>
<td></td>
</tr>
</tbody>
</table>

Approval recommended by:

Leland Pierson

Chair, College Review Committee

Date

Date

Date

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
Fungi: Laboratory
PLPA 631
Fall Semester, 2010
Wednesday 9:10-12:00 Room 308 Peterson
1 credit hour (plus concurrent enrollment in PLPA 631 Fungi: Cell Biology and Taxonomy and/or PLPA 630 Fungi: Genetics and Physiology 2 credits each)

Description:
Demonstration of key modern concepts in Kingdom Fungi; Experiments with current research methodologies using fungi

Prerequisites:
Graduate classification or approval of instructor and concurrent enrollment in PLPA 631 Fungi: Cell Biology and Taxonomy and/or PLPA 630 Fungi: Genetics and Physiology 2 credits each

Course Objectives:
This course is designed to give advanced students direct experience current research methods to work with Fungi. It is expected that students will enroll concurrently in PLPA 689 Mycology: Cell Biology and Taxonomy and/or PLPA 689 Mycology: Genetics and Physiology (2 credits each). Laboratories will be structured to allow students enrolled in either or both lecture classes experience in topics discussed in lecture. Laboratories will introduce students to topics including fungal genetics, physiology, cell biology and taxonomy. Laboratory exercises will incorporate representative organisms from all the major taxa of fungi. Students will also gain practical experience identifying fungi.

Key Course Learning Outcomes:
1. You will explore representative species of all the major taxa of fungi.
2. You will gain experience in light microscopic methodologies of working with fungi.
3. You will utilize Mendelian genetics to analyze gene segregation using model fungi.
4. You will practice your skills identifying unknown fungi.
5. You will refine your scientific public speaking skills through presentation of your fungal identification project.
6. You will gain an understanding of central pathways in fungal physiology and gain first-hand experience in production of food and alcoholic beverages.

Instructors:
Dr. Daniel Ebbole  
321 B Peterson  
Phone 845-4831  
Email: d-ebbole@tamu.edu

Dr. Brian D. Shaw  
320B Peterson  
Phone: 862-7518  
Email: bdshaw@tamu.edu
Office Hours: Shaw: Wed. 1:00 – 3:00 Room 320b Peterson
Ebbole: Mon. and Fri. 10:00-11:00 Room 321b Peterson

Textbook:
None

Class Web Page:
Elearning.tamu.edu

Grading Policy:
Lab Notebooks 50%
Paper Presentation 20%
Unknowns Project Presentation 25%
Participation and Discussion 05%
Total 100%

Grade Scale:
90-100% A
80-89% B
70-79% C
60-69% D
59 and below F

Class Attendance:
Students are expected to attend class unless satisfactory evidence is presented to substantiate the reason for absence [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)

Regrades:
Regrade requests must be made in writing no later than one week after the exam/paper is handed back. The entire exam/paper will be subject to regrade, not just a specific problem. No regrades will be accepted after that time.

Class Projects:

1) Lab Notebooks (50% of grade). Each student will keep a detailed notebook of methods, observations, results and any photos or drawings made throughout the semester from laboratory demonstrations. Notebooks will be turned in first on October 13 (20%) and again December 1 (30%).

2) Paper Presentation (20% of grade). Students will choose a paper from a list of relevant papers provided by the instructors, (or of their own choosing upon approval of the instructors). On October 13th, each student will make a 10 minute presentation summarizing the important points of the paper.
3) **Unknown Project (25% of grade)**. This project will involve identification of 5 fungal species that are isolated from material you collect. Your methods for collection and identification, and results will be incorporated into your lab notebook. On December 1 each student will give a 10 minute presentation about their unknowns project.

4) **Class Participation/ Discussion (5% of grade)**. Students are expected to be actively engaged in classroom activities and discussions.

**Class Schedule:**

<table>
<thead>
<tr>
<th>Lecture Period</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction: Safety and equipment use, cell counting with hemacytometer, Sub-culturing, media recipes. Introduce unknowns project</td>
</tr>
<tr>
<td>Week 2</td>
<td>Methods of visualization of conidiophores for microscopy; and the Aspergilli (genomic and morphological evolution); And techniques for Ascospore Isolation from <em>Aspergillus</em> and <em>Neurospora</em>.</td>
</tr>
<tr>
<td>Week 3</td>
<td>Chytridiomycota motility, zoosporae and genetics of mating and Oomycetes.</td>
</tr>
<tr>
<td>Week 4</td>
<td>Dimorphism and mating: Zygomycete and Basidiomycete (Ustilago life cycle demonstrations)</td>
</tr>
<tr>
<td>Week 5</td>
<td>Photobiology. Phototrophism in Zygomycetes, <em>Neurospora</em> photobiology</td>
</tr>
<tr>
<td>Week 6</td>
<td><em>Magnaporthe</em> infection-related morphogenesis: appressorium form and function. In vitro demonstrations, and leaf sheath inoculations, and onion epidermal infections; infection assay for time course of infection. (tricyclazole, or buff mutant)</td>
</tr>
<tr>
<td>Week 7</td>
<td>10 minute oral presentations by all class members, on paper of interest with peer review</td>
</tr>
<tr>
<td>Week 8</td>
<td>Mitosporic fungi survey</td>
</tr>
<tr>
<td>Week 9</td>
<td>Mushroom Foray: Field Trip to Lick Creek Park</td>
</tr>
<tr>
<td>Week 10</td>
<td>Physiology and genetics of fermentation: Production of beer</td>
</tr>
<tr>
<td>Week 11</td>
<td>Time-lapse microscopy and hyphal growth</td>
</tr>
<tr>
<td>Week 12</td>
<td>Fluorescence microscopy and protein localization; paper discussion on localization, FRET or BiFC</td>
</tr>
<tr>
<td>Week 13</td>
<td>Field trip to Monterey Mushrooms Fungal Biotechnology</td>
</tr>
<tr>
<td>Week 14</td>
<td>Presentations of unknown identifications and party</td>
</tr>
</tbody>
</table>

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Dear Chuck,

The Department of Biology has no objection to the three new graduate courses proposed by your department, PLPA 630 Fungi: Physiology and Genetics, PLPA 631 Fungi Laboratory, PLPA 632 Fungi Cell Biology and Taxonomy, as long as these courses are not used to block the Department of Biology from offering non-overlapping mycology courses in the future.

Good luck with the approval process.

Sincerely,

[Signature]

Thomas D. McKnight
Professor and Associate Head of Biology
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
   Plant Pathology & Microbiology

2. Course prefix, number and complete title of course:
   PLPA 632 Fungi Cell Biology and Taxonomy

3. Catalog course description (not to exceed 50 words):
   Morphological and molecular phylogenetic survey of kingdom Fungi; cell biology
   of fungal form and function

4. Prerequisite(s):
   Graduate classification or approval of instructor and concurrent enrollment in PLPA 631 Laboratory 1 credit
   Cross-listed with:
   None

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:
   □ required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   □ an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
   PLPA, BIOL, BICH, HORT and SCSC

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)
   PLPA 632 FUNGI CELL BIO & TAX

   Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code
   0 2 0 2 2 6 0 5 0 6 0 0 0 2 3 1 8 0 0 3 6 3 2

   Approval recommended by:
   [Signature]
   Leland Pierson
   Department Head - Type Name & Sign Date

   Chair, College Review Committee Date

   [Signature]
   Dean of College Date

   [Signature]
   David Wm. Reed Date

   Submitted to Coordinating Board by:
   [Signature]
   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

72 of 124 B
Fungi: Cell Biology and Taxonomy
PLPA 632
Fall Semester, 2010
Tu/Th 9:10-10:00 Room 308 Peterson
2 credit hours

**Description:**
Morphological and molecular phylogenetic survey of kingdom Fungi; cell biology of fungal form and function

**Prerequisites:**
Graduate classification or approval of instructor and concurrent enrollment in PLPA 631 Fungi Laboratory 1 credit

**Course Objectives:**
Course Objectives: This course is designed to introduce advanced students to the Kingdom Fungi. Topics include taxonomy, phylogenetics, and classification schemes used by contemporary mycologists based upon the NSF funded Fungal Tree of Life Project. Although students will be exposed to the entire kingdom Mycota, each phylogeny will be covered to only a limited extent. Therefore I we intend to focus on the conceptual framework of modern research in fungal biology rather than a comprehensive exploration of mycology nomenclature and systematics. The cell biology of fungal form and function will be examined through a review of current literature on topics of contemporary interest. Students will actively participate in analysis of current topics through class discussion and presentation of papers. Students will develop their science writing, and critical thinking skills by writing research proposals in areas of their choosing relevant to the course and evaluation of their peers’ proposals.

**Key Course Learning Outcomes**
1. You will master current high level classification schemes that will allow you to be conversant in fungal systematics.
2. You will assess current literature in a broad spectrum of fungal cell biology and developmental topics.
3. You will interpret current models explaining hyphal growth.
4. You will understand concepts unique to the cell biology of fungi.
5. You will refine your science public speaking skills through presentation of selected topics.

**Instructor:** Dr. Brian D. Shaw
320B Peterson
Phone: 979-862-7518
Email: bdshaw@tamu.edu

**Office Hours:**
Wed. 1:00 – 3:00 Room 320B Peterson
Textbook:
None: Contemporary literature will be assigned and distributed electronically by the instructor.

Class Web Page:
elearning.tamu.edu

Grading Policy:
Quiz 1 (Taxonomy – first half) 10%
Exam 2 (Taxonomy – comprehensive) 30%
Quiz 3 (Cell Biology – first half) 10%
Exam 3 (Cell Biology – comprehensive) 30%
Paper Presentation 15%
Participation 5%
Total 100%

Grade Scale:
90-100% A
80-89% B
70-79% C √
60-69% D
59 and below F

Exams:
Four exams/Quizzes will be given that will account for 80% of your grade.
Quiz #1 (10%) In class, covering the first half of fungal systematics and taxonomy lectures and reading
Exam #2 (30%) In class, comprehensive covering all of fungal systematics and taxonomy lectures and reading
Quiz #3 (10%) In class, covering the first half of cell biology lectures and reading
Exam #4 (30%) In class, comprehensive covering all of cell biology lectures and reading

Class Attendance:
Students are expected to attend class unless satisfactory evidence is presented to substantiate the reason for absence [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)

Regrades:
Regrade requests must be made in writing no later than one week after the exam/paper is handed back. The entire exam/paper will be subject to regrade, not just a specific problem. No regrades will be accepted after that time.

Class Projects:
Paper Presentation (15% of grade) and Participation (5% of grade). Literature discussion will constitute a major portion of lecture time. Each student will be designated the leader of one
discussion in the semester. Participation of all students in these discussions is mandatory. I will introduce the topic at hand for approximately one half of the class period, while the student will lead a discussion of their topical paper for the second half of the class period. I will make literature available at least one class period before it is discussed. It is expected that all students will have read the papers prior to class and will come prepared to discuss.

### Class Schedule:

<table>
<thead>
<tr>
<th>Lecture Period</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Taxonomy</strong></td>
<td></td>
</tr>
<tr>
<td>Week 1</td>
<td>Introduction: What is a fungus?</td>
</tr>
<tr>
<td>Week 1</td>
<td>Chytridiomycetes</td>
</tr>
<tr>
<td>Week 2</td>
<td>Zygomycetes</td>
</tr>
<tr>
<td>Week 2</td>
<td>Ascomycetes: Introduction and Yeasts</td>
</tr>
<tr>
<td>Week 3</td>
<td><strong>Quiz 1 covering lectures up to September 9th</strong> Lecture 5: Ascomycetes: Pyrenomycetes; Lulcoascomycetes</td>
</tr>
<tr>
<td>Week 3</td>
<td>Ascomycetes: Discomycetes; Plectomycetes</td>
</tr>
<tr>
<td>Week 4</td>
<td>Mitosporic Fungi; The concept of Anamorph, Teleomorph, Holomorph</td>
</tr>
<tr>
<td>Week 4</td>
<td>Basidiomycetes: Hymenomycetes; Gasteromycetes</td>
</tr>
<tr>
<td>Week 5</td>
<td>Basidiomycetes: Rusts and Smuts</td>
</tr>
<tr>
<td>Week 5</td>
<td>Non-Fungi: Oomycetes and Slime Molds</td>
</tr>
<tr>
<td>Week 6</td>
<td><strong>Exam 1 covering the Taxonomy section of the class</strong></td>
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<tr>
<td><strong>Cell Biology</strong></td>
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<tr>
<td>Week 6</td>
<td>Spitzenkörper</td>
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<tr>
<td>Week 7</td>
<td>Polarity Determinants</td>
</tr>
<tr>
<td>Week 7</td>
<td>Endocytosis; Lipid Rafts</td>
</tr>
<tr>
<td>Week 8</td>
<td>SNAREs and vesicle trafficking</td>
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<tr>
<td>Week 8</td>
<td>Cell Walls: glucans, chitin, glycosylated proteins; Chitin Synthases</td>
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<tr>
<td>Week 9</td>
<td>Septa: types, development, Woronin bodies, cell compartments:</td>
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<tr>
<td>Week 9</td>
<td>Cytoskeleton: Actin and Tubulin</td>
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<tr>
<td>Week 10</td>
<td>Motor Proteins</td>
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<tr>
<td>Week 10</td>
<td><strong>Quiz 3 covering the Cell Biology lectures up to November 2nd</strong></td>
</tr>
<tr>
<td>Week 11</td>
<td>Conidiation: developmental aspects, types of conidiophores, relationship to yeast models</td>
</tr>
<tr>
<td>Week 11</td>
<td>Spore Discharge Mechanisms: Pilobolus, Ascospore Discharge; Discharge mechanisms</td>
</tr>
<tr>
<td>Week 12</td>
<td>Mitosis; Cell Cycle; ‘closed’ vs. ‘open’ mitosis, clamp connections</td>
</tr>
<tr>
<td>Week 12</td>
<td>Meiosis; Ascospore and Basidiospore Formation; crozier formation</td>
</tr>
<tr>
<td>Week 13</td>
<td>Other organelles with cell biology unique to fungi: Golgi</td>
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</table>
### Table

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 13</td>
<td><strong>No Class. Thanksgiving</strong></td>
</tr>
<tr>
<td>Week 14</td>
<td>Hyphal fusion, anastomosis, <em>N. crassa</em> models.</td>
</tr>
<tr>
<td>Week 14</td>
<td>Appressorium formation: Developmental Aspects; Thigmotropism</td>
</tr>
<tr>
<td>Week 15</td>
<td><strong>University scheduled exam period: Date and Time to be Announced</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Exam 4 comprehensive covering of the cell biology section of the class</strong></td>
</tr>
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17 February 2010

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2132 TAMU  
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Good luck with the approval process.

Sincerely,

Thomas D. McKnight  
Professor and Associate Head of Biology
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 641 Tourism Experience

3. Catalog course description (not to exceed 50 words): Discusses the theoretical foundations of tourism experiences from an interdisciplinary perspective, including the role of humans, nature/landscapes, built environments and technologies in staging tourism-experiences; draws implications for the design/planning, management and marketing of tourism venues such as events, festivals, museums, hotels/resorts, cruise ships, cities, theme parks as well as websites

4. Prerequisite(s): None

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 Recreation, Park and Tourism Sciences

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>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPTS</td>
<td>641</td>
<td>Tourism Experience</td>
</tr>
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</table>

<table>
<thead>
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<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
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<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>FICE Code</th>
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</table>

Approval recommended by:

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
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 641 Tourism Experience

3. Catalog course description (not to exceed 50 words): Discusses the theoretical foundations of tourism experiences from an interdisciplinary perspective, including the role of humans, nature/landscapes, built environments and technologies in staging tourism-experiences; draws implications for the design/planning, management and marketing of tourism venues such as events, festivals, museums, hotels/resorts, cruise ships, cities, theme parks as well as websites

4. Prerequisite(s): None

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)

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)
   R P T S 6 4 1 T O U R I S M E X P E R I E N C E
   Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code
   0 3 0 0 0 3 0 1 1 1 0 2 0 0 0 5 2 5 0 2 1 1 - 1 2 0 0 3 6 3 2
   Approval recommended by:
   G e r y  D. E l l i s  ∆ 3/11/10
   Department Head - Type Name & Sign Date
   ω
   Department Head - Type Name & Sign (if cross-listed course) Date
   ∆
   Submitted to Coordinating Board by:
   Associate Director, Curricular Services
   Chair, College Review Committee Date
   Dean of College Date
   Dean of College Date
   David Wm. 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
RPTS 641
TOURISM EXPERIENCE

TR 11:10-12:25pm
Francis 252
Instructor: Dr. Ulrike Gretzel (Ulli)
Office Hours: TR 10-11am

Teaching Assistant:
Office Hours: TR 12:30-1:30pm

Office: 303A Francis Hall
Mailbox: 1st Floor, Francis Hall
Phone: 862-4043
Email: u.gretzel@tamu.edu

Office: 307 Francis Hall
Email:

Course Description

This course will discuss the theoretical foundations of tourism experiences from an interdisciplinary perspective. Students will learn about the role of humans, nature/landscapes, built environments and technologies in staging tourism-related experiences. Students will be engaged in real and virtual experience case studies around the world and will critically analyze their own and others’ experiences in tourism-related realms. Discussions will include implications for the design/planning, management and marketing of tourism venues such as events, festivals, museums, hotels/resorts, cruise ships, cities, nature and theme parks as well as websites.

Competencies you will acquire in the course:
Reflexivity and critical thinking, creativity, formulating arguments, respect for others, reading sources from various origins and covering multiple disciplines, academic writing, report writing, team work, working within the constraints of a real-world project

Course Requirements

- Required Readings:

  Additional readings will be made available on a CD.

- Course Website: Facebook Group. I will post announcements, materials and pictures on the group page. If you find something interesting, post it. You will get participation credit for it.

- Participation: This course uses a lecture-discussion format. Students are required to read assigned readings before class, attend class and actively participate in class discussions throughout the semester in order to achieve the full participation score.

- Reflection papers: Students will submit 2 papers discussing readings, case studies and concepts presented in class.

- Journal: Students will keep a journal throughout the semester to record their experiences.

- Experiencescape Case Study: Students will be required to submit a detailed description of an experiencescape of their choice (e.g. park, hotel, museum, event, website, etc.).

- Group Project: Students will form teams to design a tourism experience concept.
Additional Requirement for Graduate Students

- Final Paper: Graduate students in the course will submit a final paper in the form of an essay, a literature review or a research paper.

Grading Policy

The instructor makes every effort to grade fairly and is always willing to explain why a specific grade was given. In the event that students feel they received an undeserved grade, they should make their case in writing to the instructor. Student evaluations will be based on the following:

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation (Class attendance and in-class discussions)</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Reflection papers</td>
<td>20%</td>
<td>20%</td>
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<tr>
<td>Journal</td>
<td>5%</td>
<td>5%</td>
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<tr>
<td>Case Study</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Group Project</td>
<td>40%</td>
<td>30%</td>
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<tr>
<td>Final paper</td>
<td>-</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Grading Scale: A =100-90; B = 89-80; C = 79-70; D = 69-60; F = 59 and below

Rules to Live By

Attendance: see [http://student-rules.tamu.edu/rule7.htm](http://student-rules.tamu.edu/rule7.htm) for a complete list of acceptable reasons for absences to be excused. Appropriate documentation must be provided. Students are responsible for contacting the instructor to arrange make-up work.

Academic Integrity: An Aggie does not lie, cheat or steal or tolerate those who do. Anyone found to be violating academic integrity will be subject to disciplinary action. Please refer to the Aggie Honor Code website for information on unacceptable behaviors. [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)

Special Needs: The Americans with Disabilities Act (ADA) 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 Cain Hall or call 845-1637 at the beginning of the semester. All other special needs have to be brought to the attention of the instructor as soon as they arise. No accommodations can be made after a grade has been assigned.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Required Readings</th>
<th>Comments</th>
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<tbody>
<tr>
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<td></td>
<td>Introduction</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Conceptualizing the Tourism Experience</td>
<td>16, 25</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Tourism Experience(s)</td>
<td>20</td>
<td>Chapters 1 &amp; 10 MOVIE!</td>
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<tr>
<td>4</td>
<td></td>
<td>Technology-mediated experiences</td>
<td>21, 7</td>
<td></td>
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<tr>
<td>5</td>
<td></td>
<td>Virtual experiences</td>
<td>9, 12</td>
<td></td>
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<tr>
<td>6</td>
<td></td>
<td>Group Project</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>From place to experience</td>
<td>14, 2</td>
<td>14: Ch. 1, 6; 2: pages 198-209; 225-247</td>
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<tr>
<td>8</td>
<td></td>
<td>Experience Stages: Events</td>
<td>17, 8, 20</td>
<td>8: Ch. 27; 20: Ch. 7</td>
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<td>9</td>
<td></td>
<td>Experience Stages: Theme Parks</td>
<td>1, 6</td>
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<td>10</td>
<td></td>
<td>Experience Stages: Natural Attractions</td>
<td>20, 22</td>
<td>20: Ch. 8; 22: Ch. 1, 2, 3, 4</td>
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<td>11</td>
<td></td>
<td>Experience Stages: Buildings</td>
<td>20, 28</td>
<td>20: Ch. 6</td>
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<td>12</td>
<td></td>
<td>Heritage Tourism/Nostalgia</td>
<td>5, 10, 20</td>
<td>20: Ch. 9</td>
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<td>13</td>
<td></td>
<td>Experience Design</td>
<td>24, 14</td>
<td>14: Ch. 3</td>
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<td>14</td>
<td></td>
<td>Experience Design for Events</td>
<td>20</td>
<td>20: Ch. 2</td>
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<td>Experience Production</td>
<td>18, 14</td>
<td>18: Ch. 2,3; 14: 7</td>
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<td>Experience Production</td>
<td>27</td>
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<td>17</td>
<td></td>
<td>Architecture &amp; Tourism</td>
<td>11, 15</td>
<td>15: Architecture &amp; Mass Tourism; Beyond In/ Authenticity</td>
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<td>18</td>
<td></td>
<td>Architecture &amp; Tourism</td>
<td>19, 14</td>
<td>14: Ch. 5</td>
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<td>19</td>
<td></td>
<td>Culinary Tourism</td>
<td>13</td>
<td>13: Ch. 1, 3</td>
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<td>21</td>
<td></td>
<td>Dark Tourism</td>
<td>8, 22</td>
<td>8: Ch. 29; 22: Ch. 5</td>
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<tr>
<td>22</td>
<td></td>
<td>Dark Tourism</td>
<td>15, 2</td>
<td>2: pages 163-174; 15: The Fall; The Veneration of Ruins in the Landscape of Holocaust Memory; Selling the Shtetl Field Trip!</td>
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<tr>
<td>23</td>
<td></td>
<td>Holidays, weddings and other celebrations</td>
<td>26</td>
<td></td>
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<tr>
<td>24</td>
<td></td>
<td>NO CLASS! - Thanksgiving</td>
<td>None</td>
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<tr>
<td>25</td>
<td></td>
<td>Remembering Experiences</td>
<td>23</td>
<td>23: Ch. 6 &amp; 7</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Websites as Experiencescapes</td>
<td>None</td>
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</tbody>
</table>
Readings:

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: **Soil and Crop Sciences**

2. Course prefix, number and complete title of course: **SCSC 631 Prerequisite Programs for Feed Industry HACCP**

3. Catalog course description (not to exceed 50 words): **Development of preliminary science-based risk management decision factors in feed industry; understanding and complying with FDA regulatory requirements for animal feed; application of international standards; prerequisite programs for Feed Industry Hazard Analysis and Critical Control Point (HACCP); module one of three.**

4. Prerequisite(s): **Graduate classification**

Cross-listed with: **N/A**

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

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

6. Is this a repeatable course? [X] Yes [ ] 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) **NA**
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography) **MS in Agronomy**

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. Prefx  Course #  Title (excluding punctuation)

<table>
<thead>
<tr>
<th>S</th>
<th>SC</th>
<th>SC</th>
<th>631</th>
<th>PREREQ</th>
<th>FEED</th>
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<th>HACCP</th>
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<td>0</td>
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Approval recommended by: [Signature]
Department Head - Type Name & Sign [Date]

Chair, College Review Committee [Date]

Dean of College [Date]

Dean of College [Signature] [Date]

Associate Director, Curricular Services [Date]

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

Curricular Services – 3/09
SCSC 631

Prerequisite Programs for Feed Industry Hazard Analysis and Critical Control Point

Dr. Tim Herrman, Professor
Department of Soil & Crop Sciences
Texas A&M University
State Chemist and Director Office of the Texas State Chemist
Phone: (979) 845-1121
Fax: (979) 845-1389
E-mail: tjh@otsc.tamu.edu

Course Description and Objectives

SCSC 631, Prerequisite Programs for Feed Industry HACCP, is an online course that will prepare students to implement quality management programs in preparation to utilize HACCP principles. SCSC 631 is delivered 100% online using a course Website in the WebCT course management system, e-mail, discussion boards, mail and CDs. Information about the course may be found at http://agonline.tamu.edu/haccp. SCSC 631 is the first of three moduled courses addressing HACCP. This course may be taken for 1 graduate credit.

The course objectives are tied to three individual modules that emphasize pre-requisite programs, application of HACCP principles to managing feed and food safety risks, and developing a functional HACCP plan.

- Understand the relationship between a quality management systems, risk analysis and HACCP (1 credit)

Learning Outcomes

Students will be equipped to apply a science-based approach to risk management that includes understanding risk analysis, writing standard operating procedures (SOPs) and sanitation standard operating procedures (SSOPs), identifying appropriate prerequisite programs to manage feed and food safety risks in a feed mill, understanding and complying with FDA regulatory requirements for animal feed, and understanding international standards including Codex Alimentarius and ISO.

Prerequisites: Graduate classification

Textbook


Participants will receive a packet of materials, which includes the course materials on CD, via mail.
Grading Policy for Graduate Students
There is no attendance requirement for this class, which is offered using a distance education format. All class assignments including quizzes, homework and exam must be completed by the final day of class. Extension of this deadline for class activities is subject to TAMU rules and guidelines please see: http://student-rules.tamu.edu/rule7.htm for details.

Grades will be based on the HACCP plan assignment, quiz scores and exam.

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90% - 100%</td>
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<td>B</td>
<td>80% - 89%</td>
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<td>C</td>
<td>70% - 79%</td>
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<tr>
<td>D</td>
<td>65% - 69%</td>
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<td>F</td>
<td>&lt; 65%</td>
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Grade Scale:

Class Schedule

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<th>Module</th>
<th>Content</th>
<th>Homework</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>HACCP Introduction</td>
<td>Form Teams &amp; Select Product</td>
<td>Text Chapter 1, Appendix A &amp; B</td>
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<tr>
<td></td>
<td></td>
<td>Feed Industry Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Prerequisites to HACCP</td>
<td>Preliminary Steps: Process flow, Product description</td>
<td>Text Chapter 2, CGMP and BSE regulations</td>
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<tr>
<td></td>
<td></td>
<td>CGMPS BSE 589:2000-2001</td>
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<td></td>
<td></td>
<td>Standard Operating Procedures</td>
<td></td>
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<td></td>
<td>Sanitation SOPs</td>
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<tr>
<td>4</td>
<td>1</td>
<td>Biological hazards</td>
<td>Biological hazard guide (Merck Vet Manual as a reference)</td>
<td>Text Chapter 4 Food Safety Risk Analysis</td>
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<td></td>
<td></td>
<td>Risk Assessment</td>
<td></td>
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<td></td>
<td></td>
<td>Pathogen reduction</td>
<td></td>
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<tr>
<td>5</td>
<td>1</td>
<td>Chemical hazards</td>
<td>Chemical hazard guide</td>
<td>Text Chapter 5,6 Mycotoxin Cast Exc. Sum, 2,4,5</td>
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<td></td>
<td>Physical hazards</td>
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<td></td>
<td>Mycotoxins</td>
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<td></td>
<td></td>
<td>Exam</td>
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</tbody>
</table>

American Disability 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.
Copyright
Course packets and all other materials generated and/or used during this course are copyrighted. Because these materials are copyrighted, you do not have the right to copy the course packets, unless the instructor expressly grants permission.

Academic Integrity Statement

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

For more information, read 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 Soil and Crop Sciences

2. Course prefix, number and complete title of course: SCSC 632 Feed Industry HACCP - Principles and Plan Development

3. Catalog course description (not to exceed 50 words): Principles of Feed Industry Hazard Analysis and Critical Control Point (HACCP) plan development; science-based risk analysis of decision factors; regulatory requirements of HACCP; module two of three.

4. Prerequisite(s): SCSC 631

Cross-listed with: N/A

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

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)
   SCSC 632 Feed Industry HACCP - Principles and Plan Development

   Lect. Lab SCI CIP and Fund Code Admin. Unit Acad. Year HICE Code
   0 1 0 0 0 1 0 1 1 1 1 0 2 0 0 0 5 2 6 2 0 1 1 - 1 2 0 0 3 6 3 2

   Approval recommended by:
   Wayne Smith for David Baltensperger
   Department Head - Type Name & Sign Date 2-11-10

   Chair, College Review Committee Date

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

   Submitted to Coordinating Board by:
   Date

   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
SCSC 632

Feed Industry Hazard Analysis and Critical Control Point,

Principles and Plan Development

Dr. Tim Herrman, Professor
Department of Soil & Crop Sciences
Texas A&M University
State Chemist and Director Office of the Texas State Chemist
Phone: (979) 845-1121
Fax: (979) 845-1389
E-mail: tjh@otsc.tamu.edu

Course Description and Objectives

SCSC 632, Feed Industry HACCP Principles and Plan Development, is an online course that will prepare students to develop a HACCP plan. SCSC 632 is delivered 100% online using a course Website in the WebCT course management system, e-mail, discussion boards, mail and CDs. Information about the course may be found at http://agonline.tamu.edu/haccp. SCSC 632 is the second of three moduled courses addressing HACCP. This course may be taken for 1 graduate credit. Students taking HACCP training to comply with the USDA meat and poultry HACCP regulations or FDA seafood and juice HACCP regulations should enroll in ANSC 657.

The course objectives are tied to three individual modules that emphasize pre-requisite programs, application of HACCP principles to managing feed and food safety risks, and developing a functional HACCP plan.

- Possess the information and knowledge to identify, assess and manage feed hazards using HACCP principles
- Prepare a model HACCP plan in a team environment

Learning Outcomes ✔

Students will be equipped to apply a science-based approach to risk management that includes HACCP principles and their application in the development of a HACCP plan.

Prerequisites: SCSC 631

Textbook

Participants will receive a packet of materials, which includes course materials on CD, via mail.
Grading Policy for Graduate Students
There is no attendance requirement for this class, which is offered using a distance education format. All class assignments including quizzes, homework and exam must be completed by the final day of class. Extension of this deadline for class activities is subject to TAMU rules and guidelines please see: http://student-rules.tamu.edu/rule7.htm for details.

Grades will be based on the HACCP plan assignment, quiz scores and exam.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Exam</td>
<td>30%</td>
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<tr>
<td>Model HACCP plan</td>
<td>50%</td>
</tr>
</tbody>
</table>

Grade Scale:
- A  90% - 100%
- B  80% - 89%
- C  70% - 79%
- D  65% - 69%
- F  < 65%

Class Schedule

<table>
<thead>
<tr>
<th>Topic</th>
<th>Module</th>
<th>Content</th>
<th>Homework</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>Hazard analysis and Critical Control Point</td>
<td>Preliminary Steps</td>
<td>Text Chapter 7,8,9</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Critical limits, monitoring, corrective action, verification, recordkeeping</td>
<td>Begin hazard analysis</td>
<td>Text 10,11,12, 13, 14</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>HACCP Standards Global Application Import Safety Action Plan</td>
<td>Complete HA form, Decision Tree form and assign CCP in HA form and process flow</td>
<td>Text 15,16, 17 CAC 54-2004 Import Safety Plan</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Lectures completed Exam</td>
<td>Complete Critical Limits, Monitoring, Corrective Actions</td>
<td>Model HACCP Plan recording</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>HACCP Plan Completion</td>
<td>Complete Recording Keeping and Verification Form, and Plan Summary</td>
<td>Model HACCP Plan recording</td>
</tr>
</tbody>
</table>

American Disability 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.
Copyright
Course packets and all other materials generated and/or used during this course are copyrighted. Because these materials are copyrighted, you do not have the right to copy the course packets, unless the instructor expressly grants permission.

Academic Integrity Statement ✓

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

For more information, read 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
   Soil and Crop Sciences

2. Course prefix, number and complete title of course:
   SCSC 633 Feed Industry HACCP - Advanced Plan Development

3. Catalog course description (not to exceed 50 words):
   Principles of Feed Industry Hazard Analysis and Critical Control Point (HACCP) advanced plan development; case studies of HACCP principles; HACCP plan development for feed industry companies; module three of three.

4. Prerequisite(s): SCSC 631 and SCSC 632
   Cross-listed with: N/A
   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)
      NA
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
      MS in Agronomy

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)
   SCSC 633 FEED IND HACCP ADV PLAN
   Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year HCE Code
   0 1 0 0 1 1 1 0 2 0 0 5 2 6 2 0 1 1 - 1 2 0 0 3 6 3 2
   Approval recommended by:
   Wayne Smith for David Baltensperger 2/11/10
   Department Head - Type Name & Sign Date
   Chair, College Review Committee
   Dean of College Date
   David Wm. Reed Date
   Dean of College
   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

Attachment B
MAY 27 2010
SCSC 633

Feed Industry Hazard Analysis and Critical Control Point Advanced Plan Development

Dr. Tim Herrman, Professor
Department of Soil & Crop Sciences
Texas A&M University
State Chemist and Director Office of the Texas State Chemist
Phone: (979) 845-1121
Fax: (979) 845-1389
E-mail: tjh@otsc.tamu.edu

Course Description and Objectives
SCSC 633, Feed Industry HACCP Advance Plan Development involves one-on-one educational assistance to students developing an individualized HACCP plan for their company. The course is delivered through online training to review HACCP principles in a case study context. Instructor-student contact will occur through email and phone conversations involving review of the HACCP plan and recommendations on plan improvement. The course is delivered online using a course Website in the WebCT course management system, e-mail, discussion boards, mail and CDs. Information about the course may be found at http://agonline.tamu.edu/haccp. SCSC 633 is the third part of a modulated course and is offered for one hour of graduate credit.

The course objective:
- Apply verification procedures to validated and complete a HACCP plan for a feed manufacturing establishment.

Learning Outcomes
Students will be equipped to apply a science-based approach to risk management that includes completing and validating a HACCP plan for a feed manufacturing establishment.

Prerequisites: SCSC 631 and 632

Textbook
None

Grading Policy for Graduate Students
There is no attendance requirement for this class, which is offered using a distance education format. All class assignments must be completed by the final day of class. Extension of this deadline for class activities is subject to TAMU rules and guidelines please see: http://student-rules.tamu.edu/rule7.htm for details.

Grades will be based on the HACCP plan development.

- HACCP Plan Evaluations 25%
- Exam 25%
- HACCP Plan Completion 50%
A complete HACCP plan must be submitted by the end of the semester.

**Grade Scale:**

- A 90% - 100%
- B 80% - 89%
- C 70% - 79%
- D 65% - 69%
- F < 65%

**Class Schedule**

<table>
<thead>
<tr>
<th>Topics</th>
<th>Module</th>
<th>Content</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>HACCP Auditor Manual, Parts I-V</td>
<td>Evaluate One Feed Establishment Model HACCP Plan</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>HACCP Auditor Manual, Appendices</td>
<td>Evaluate Second Feed Establishment Model HACCP Plan</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Review of HACCP Principles</td>
<td>Complete forms for Preliminary Steps and Hazard Analysis</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Review of HACCP standards</td>
<td>Complete forms for Critical Limits, Monitoring, Corrective Action, Record Keeping, Verification and Summary</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Global Regulatory Standards and Third Party Programs</td>
<td>Complete Company Plan</td>
</tr>
</tbody>
</table>

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

Form Instructions

1. Request submitted by (Department or Program Name): Educational Psychology - Special Education

2. Course prefix, number and complete title of course: SPED 618 - Induction and Preparation for the Special Education Professoriate

3. Catalog course description (not to exceed 50 words): Orientation to full-time doctoral studies; understanding historical and contemporary issues in the field of special education; familiarization with special education literature and systematic reviews of research literature.

4. Prerequisite(s): admission into special education doctoral program

Cross-listed with: 

Stacked 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)
      Special Education Doctoral Program
   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)

<table>
<thead>
<tr>
<th>SPED</th>
<th>618</th>
<th>INDUCT</th>
<th>PROF</th>
<th>DEV</th>
<th>HIGH</th>
<th>ED</th>
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<td>Lab</td>
<td>SCH</td>
<td>CIP and Fund Code</td>
<td>Admin. Unit</td>
<td>Acad. Year</td>
<td>HICE Code</td>
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<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Approval recommended by:

Dr. Victor Wilson
Department Head or Program Chair (Type Name & Sign) Date

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

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/10
SPED 618
Doctoral Seminar I

INDUCTION AND PREPARATION FOR THE SPECIAL EDUCATION PROFESSORIATE

Class meetings: Tuesdays 12:15 – 3 pm

Instructor: Shanna Hagan-Burke, Ph.D. shaganburke@tamu.edu
Associate Professor of Special Education
Department of Educational Psychology
979-845-7423
652 Harrington Tower

Office Hours: By appointment*
*Students are encouraged to seek feedback and clarification as needed through out-of-class meetings and email communications. Please schedule meetings in advance. In general, email is the most efficient and swift means of communication for questions/clarifications as well as arranging a meeting time.


Prerequisites: Admission into the Special Education Doctoral Program.

Description: This seminar has two primary purposes: (a) to orient and promote student success in full-time doctoral studies and b) to promote understanding of historical and contemporary issues in the field of special education.

Attendance Policy: Students are required to attend class all class sessions on time. For any university excused absence, you should submit class work as assigned by the instructor by one week from the absence. See http://student-rules.tamu.edu/rule7.htm for university policy.

Course Objectives:
1. Students will establish a network of mutual peer support and information sharing.
2. Students will receive group advisement on program and university doctoral requirements.
3. Students will meet and dialogue with program faculty and learn about faculty research agendas and projects.
4. Students will receive guidance in setting up experiences for meeting competency requirements.
5. Students will learn about the content and process of preliminary exams and the dissertation process.
6. Students will become familiar with professional journals and conferences relevant to their specializations, and learn to monitor them.
7. Students will receive initial experience with the *APA style manual*, good *technical writing*, and the *structure of research articles* and *of conference proposals*.

8. Students will learn to prepare and update a *professional vita*.

9. Students will expand understanding of the historical context and contemporary issues of special education. Multiple domains including academic instruction, early intervention, low-incidence disabilities, social behavior, assessment/identification, and transition/secondary special education will be examined using historical and current perspectives provided through guest speakers and selected readings.

10. Students will identify *areas of special education* where they are less knowledgeable, and develop strategies for remedying those deficits.

### Course Requirements

**Class Preparation and Participation:** Come to all class meetings thoroughly prepared, having completed assignments sufficiently to (a) engage in discussions about assigned readings and (b) relate their contents to previous class assignments and discussions. The SPED Faculty who deliver research presentations may assign additional articles to be read prior to those presentations.

**Class Article Responses:** Read weekly assigned articles and prepare a 1-4 paragraph summary for each, followed by notes to facilitate discussion and recollection of key points. Each summary should reflect your deliberate and thoughtful analysis of the article. Be prepared to identify and discuss the big ideas of assigned readings each class meeting. The notes section can be in list format and contain direct quotations (using APA citations).

**Foundations Reading:** Throughout the semester students will self-identify a total of ten scholarly articles in an area of interest and submit a 1-2 paragraph summary of each article, followed by two ratings (1-5 scale): (a) Contribution to my knowledge base and (b) Recommendation to others.

**Curriculum Vitae:** Prepare and submit a draft of his/her vita. Submissions should incorporate pertinent scholarly activities to date and reflect the guidelines and examples provided in class and/or your advisor.

**Literature Summary:** Summarize the existing empirical research regarding a special education (or related) intervention of their choice. This assignment will be submitted in three parts:

- **Part 1:** Individual article annotations for each study to be included in your review.
- **Part 2:** Tables summarizing information across all of the articles.
- **Part 3:** A written summary paper that describes your search procedures, states the purpose of your review, includes your summary tables, and synthesizes what you learned, what remains unknown across the studies as a group.

**Literature Summary Presentations:** Prepare and deliver a 10-15 minute presentation that summarizes the knowledge-base in the area you selected for your literature summary. Presentations should be professionally prepared and utilize Microsoft Powerpoint.

**Course Evaluation:** Individual assignments will be graded as *pass, low pass, or resubmit*. The final grade option for this course is Pass/No Pass. Successful completion requires submission and satisfactory completion of all assignments.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings*</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 31</td>
<td>-Introduction and Course Overview&lt;br&gt;-Brief Introduction: Using the APA Style Manual</td>
<td>-----------</td>
<td>-----------</td>
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<tr>
<td>Sep 07</td>
<td>-Article Discussion: Roles of educational research&lt;br&gt;-Overview: SPED Doctoral Program of Study Parameters</td>
<td>Lyon, 2004</td>
<td>Article responses</td>
</tr>
<tr>
<td>Sep 14</td>
<td>-Article Discussion: Roles of education research&lt;br&gt;-Assignment Overview: Reviewing Empirical Research</td>
<td>Gersten, 2001</td>
<td>Article responses</td>
</tr>
<tr>
<td>Sep 28</td>
<td>- Article Discussion: Making Sense in Special Education&lt;br&gt;- Overview of SPED Doctoral Competency: Pre-dissertation research</td>
<td>Kauffman, 2007</td>
<td>Article response Foundation reviews</td>
</tr>
<tr>
<td>Oct 05</td>
<td>- Article - Discussion: What they Don’t Teach you in Grad School&lt;br&gt;-Preparing a Curriculum Vitae</td>
<td>Gray &amp; Drew, 2008</td>
<td>Article response Foundation reviews</td>
</tr>
<tr>
<td>Oct 12</td>
<td>- Overview of SPED Doctoral Competency: Grant writing</td>
<td>Will, 1986</td>
<td>Article Response Pt 1:Annotations Student Curriculum Vitae</td>
</tr>
<tr>
<td>Oct 19</td>
<td>-Seminal Literature Discussion&lt;br&gt;-SPED Doctoral Competencies: College Teaching</td>
<td>Dunn, 1968</td>
<td>Article response Foundation reviews</td>
</tr>
<tr>
<td>Oct 26</td>
<td>-Seminal Literature Discussion: Seeking truth&lt;br&gt;-Structure of Positions/Ranks in Higher Education</td>
<td>Wagner, 1993</td>
<td>Article response Foundation reviews</td>
</tr>
<tr>
<td>Nov 02</td>
<td>Article Discussion: What makes special education special?&lt;br&gt;Overview of SPED Doctoral Competency: Field Supervision</td>
<td>Fuchs &amp; Fuchs, 1995</td>
<td>Article response Foundation reviews</td>
</tr>
<tr>
<td>Nov 09</td>
<td>-Contemporary Topic: Response to Intervention&lt;br&gt;Overview of SPED Comprehensive Exam Process</td>
<td>Fuchs &amp; Fuchs 2006&lt;br&gt;Gersten, 2006</td>
<td>Article responses Foundation reviews</td>
</tr>
<tr>
<td>Nov 16</td>
<td>-Article Discussion: The Function of Labels in Special Education&lt;br&gt;-Overview: Developing and filing a program of study</td>
<td>Kauffman, 2007 Labels</td>
<td>Article response Pt 2:Summary Tables</td>
</tr>
<tr>
<td>Nov 23</td>
<td>- Overview: The dissertation process&lt;br&gt;- Student literature summary presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov 30</td>
<td>Student literature summary presentations&lt;br&gt;Concluding comments</td>
<td>TBA</td>
<td>Pt 3: Literature Summary Paper (tables incorporated)</td>
</tr>
</tbody>
</table>

*The instructor will provide complete citation information for assigned articles. Articles can be downloaded/ordered on the TAMU Library Website: http://library.tamu.edu/.
AMERICANS WITH DISABILITIES ACT
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SCHOLASTIC DISHONESTY
As commonly defined, plagiarism consists of passing off the ideas, words, writings, etc., which belong to another as one’s own. 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. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the current issue of the Texas A&M University Student Rules, under the section, "Scholastic Dishonesty."

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 TAMU community from the requirements or the processes of the Honor System. On all course work, assignments, or examinations at Texas A&M University, the following Honor Pledge shall be pre-printed and signed by the student: "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work." For additional information please visit: http://www.tamu.edu/aggiehonor/

RESPECT
The faculty of the College of Education and Human Development (CEHD) value and respect diversity and the uniqueness of each individual. The faculty affirms its dedication to non-discrimination in our teaching, programs, and services on the basis of race, color, religion, gender, age, sexual orientation, domestic partner status, ethnic or national origin, veteran status, or disability. The CEHD at Texas A & M University is an open and affirming organization that does not tolerate discrimination, vandalism, violence or hate crimes. We insist that appropriate action be taken against those who perpetrate such acts. Further, the College is committed to protecting the welfare, rights, and privileges of anyone who is a target of prejudice or bigotry. Our commitment to tolerance, respect, and action to promote and enforce these values embraces the entire university community. In the spirit of shared responsibility, each University unit, student organization, and community member is encouraged to help make our campus, and this class, a welcoming place for all. Should you have any concerns related to respect for diversity or feel that you (or any others) are being discriminated against, please contact your departmental Ombudsperson, the Department Head, or the College Ombudsperson.
Literature Summary

This assignment will culminate in the development of a 10 to 12 page summary of the annotations in your area of choice. Much of the assignment is accomplished best through tables, thus eliminating the need to summarize numerous details and results through boring and sometimes incomprehensible text. The assignment will be submitted in three parts.

Part 1: Individual article annotations for each study included in your review.
Part 2: Tables summarizing information across all of the articles.
Part 3: A written summary paper that describes your search procedures, states the purpose of your review, includes your summary tables, and synthesizes what you learned, what remains unknown across the studies as a group.

Students have different areas of interest and those topics may lend themselves to slight modifications in the aspects of each study to be synthesized. If it makes more sense to use different categories (or combine some), arrange a meeting with the instructor to discuss. The following information is provided as set of general guidelines for each Part.

Part 1: Individual Article Annotations
Annotations about bibliographical sources give descriptions about how each source is useful to in constructing a paper or argument. This information, often only a few sentences long, establishes a summary for and expresses the relevance of each source prior to writing.

Every article to be included in your literature review should first be summarized individually. Below are the minimal categories you should likely address as you summarize individual studies. Keep in mind that current issues within the field as well as your particular research interests may call for additional/different information to be summarized (and subsequently incorporated into your tables and summary paper).

1. Complete APA Citation
2. Purpose of the study- Be succinct.
3. Participants- (i.e., number and additional characteristics (i.e., gender, age, disability category, etc.)
4. Research Design- specify the research design used in the study.
5. Independent Variable- This is what the researcher "did" to cause an effect (hopefully) in an experimental or quasi-experimental study. If the study is correlational, these are the variables that were theorized to be associated with a particular outcome. Figure out a way to summarize the characteristics of your interventions empirically (e.g., duration, number of sessions, attention to fidelity, etc. In your summary paper you will use organize this information into a table. The discussion section of your summary paper should focus on the similarity of the IVs and whether we can draw any meaningful and general conclusions from the studies as a group.
6. **Dependent Measures** - These are the measures that were used to assess the effects of the study. At this point, the psychometric properties of the measures may be Greek to you, but you will need to indicate the reliability and validity of the measures, and whether they are relevant to the study.

7. **Results** - Now that you've critiqued these studies, what did they find? What were the most salient findings? Can you have any faith in the results? At this point I am not concerned that you discuss the statistics that were used, or research errors that may or may not have occurred. (Save those issues for the discussion section of your larger paper.)

8. **Threats to Results** - This is where you indicate whether the study controlled for sources of error (e.g., deliberate bias and distortion, sampling bias, potential observer or research bias, Fidelity of implementation). These points also lend themselves neatly to a table format in which you would check whether or not each study met certain criteria.

9. **Areas for Further Research** - What questions and studies need to be completed based on your review of this literature.

---

**Part 2: Summary Tables**

Mike Bullis (Professor of Special Education and Dean at University of Oregon) once said, "Something I have learned later in life is that it is the rare reader who hangs on the written word. It is much cleaner, easier, and more reader friendly to present ideas through tables" (personal communication, September, 1995). This assignment is your first opportunity for practice.

Generating summary tables will allow you to synthesize information across studies in a way that is not possible through narrative text alone. Spend some time organizing your tables in a way that is most helpful and allows for the most pertinent comparisons across your studies. Following are some guidelines:

a. Tables must be submitted in Microsoft Word (NOT EXCEL).

b. Use APA Guidelines when formatting tables. I allow two exceptions:
   - You may use smaller font (but no smaller than 9 point), and you may use single spacing so long as the information is clear and easy to track.

b. Do not attempt to develop one monster table with so many columns that the information is incomprehensible. This defeats the purpose and potential benefit of organizing findings into tables.

c. Make as many tables as necessary to organize your literature summaries in a way that allows you to make synthesizing statements about the body of research you reviewed as a whole.

d. Your tables will be incorporated into your Part 3 Summary Paper.

e. Making good tables is an art. Some tables may present information most appropriately with a landscape format while others may be portrait. There is no need for all of your tables to be one or the other.

f. Take this opportunity to ensure that you are able to fluently organize information into tables.
Part 3: Summary Paper

Your summary paper provides the narrative so that your tables “tell a story.” The narrative should be used to “hit the high points,” serving to support and interpret the findings presented in the tables. More is not necessarily better. Be clear and succinct, relying on your tables to help the reader make sense of what you learned across the studies reviewed.

1. Use 1 inch margins on all four sides of all pages and 12 point font.
2. Follow the current APA style for heading levels, text, citations, references, and tables.
3. Use a title page that follows APA Guidelines.
4. The four major sections of your paper will be an introduction, method, results, and discussion.

Major Headings:

Introduction: The introduction should present the key issue you studied. Briefly state why it is important, and conclude with a clear “purpose” statement. Supporting references are fine. Keep your introduction short.

Method: Iterate the exact research question you addressed. What were the parameters of your search (e.g., years, age group, etc.)? What were the criteria for inclusion used to determine which articles were included? List the studies you reviewed in APA format in the reference section of your paper.

Results: Your results section will have subheadings that describe the columns in your tables. For example, you will have a section with a paragraph or two describing the participants from the studies you reviewed. What were the patterns? Were there some age ranges that were under-studied or not included at all across your studies? Following are examples of subheadings that may be included in this section. Keep in mind that your particular question, along with the information you highlighted in your tables, may warrant slightly different headings.
   - Characteristics of Participants
   - Research Designs
   - Dependent Measures
   - Features of the Intervention
   - Fidelity (only if this was something you reviewed)
   - Results

Discussion: This section need not be particularly long. Summarize the information gained from your review and make recommendations for future research in this area.

References

Tables
July 19, 2010

MEMORANDUM

TO: Graduate Instruction Committee, CEHD

THROUGH: Dr. Jim Kracht
Associate Dean for Academic Affairs

THROUGH: Dr. Victor Willson
Department Head, EPSY

FROM: Dr. Michael Benz
Special Education Program Coordinator

SUBJECT: New Course – SPED 618

Attached please find the appropriate paperwork to establish SPED 618, a new course in the Department of Educational Psychology.

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

Rationale: The purpose of this memo is to request that a previously offered doctoral seminar be formally converted to an official course: SPED 618 Induction and Preparation for the Special Education Professoriate. Historically the SPED program’s full-time doctoral enrollment fluctuated and we were unable to offer doctoral level courses consistently. Over the past several years, the SPED program has increased and stabilized its doctoral enrollment and now admits a sufficient number of full-time doctoral students to offer the course annually.

The seminar we propose to convert to a permanent course is a current requirement of the SPED doctoral program and its content is not duplicated in other courses. Based on a stable enrollment of doctoral students who need this required content, we recommend that the previously offered EPSY seminar be given a formal and permanent course number. The content and competencies of proposed for SPED 618 are essential to the SPED doctoral program’s mission to prepare scholars to enter higher education and/or research institutes. The course
is designed to be offered during students' first semester of full-time doctoral studies in SPED and its two primary purposes are: (a) to promote an understanding of the purpose and expectations of the SPED doctoral program and its associated competencies and (b) to familiarize students with some of the seminal special education literature and provide an initial framework for conducting systematic reviews of research literature. The course introduces students to the field of special education as they prepare to pursue skills and expertise to go into higher education upon graduation.

**Vote by the Program:** The content in this course is a required component of the SPED doctoral program. It has the unanimous support of the Special Education program faculty.

We appreciate your consideration. Please contact me should you require additional information.
July 19, 2010

MEMORANDUM

TO: Graduate Instruction Committee, CEHD

THROUGH: Dr. Jim Kracht
Associate Dean for Academic Affairs

THROUGH: Dr. Victor Wilson
Department Head, EPSY

FROM: Dr. Michael Benz
Special Education Program Coordinator

SUBJECT: New Course – SPED 618

Attached please find the appropriate paperwork to establish SPED 618, a new course in the Department of Educational Psychology.

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

Rationale: The purpose of this memo is to request that a previously offered doctoral seminar be formally converted to an official course: SPED 618 Induction and Preparation for the Special Education Professoriate. Historically the SPED program’s full-time doctoral enrollment fluctuated and we were unable to offer doctoral level courses consistently. Over the past several years, the SPED program has increased and stabilized its doctoral enrollment and now admits a sufficient number of full-time doctoral students to offer the course annually.

The seminar we propose to convert to a permanent course is a current requirement of the SPED doctoral program and its content is not duplicated in other courses. Based on a stable enrollment of doctoral students who need this required content, we recommend that the previously offered EPSY seminar be given a formal and permanent course number. The content and competencies of proposed for SPED 618 are essential to the SPED doctoral program’s mission to prepare scholars to enter higher education and/or research institutes. The course
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions

1. Request submitted by (Department or Program Name): Educational Psychology - Special Education

2. Course prefix, number and complete title of course: SPED 619 - Critical Research and Practice Issues in Special Education

3. Catalog course description (not to exceed 50 words): Examination of the historical, conceptual/theoretical and empirical basis of special education research and practice; understanding special education as a field and specific areas for in-depth knowledge

4. Prerequisite(s): admission into special education doctoral program

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

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

7. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
      Special Education Doctoral Program
   b. 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) | Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | HIC Code | Approval recommended by: 
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 
SPED | 619 | CRITICAL RESCH PRACT SPED | 0 | 3 | 0 | 3 | 1 | 3 | 1 | 10 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 9 | 2 | 0 | 1 | 1 | - | 1 | 2 | 0 | 0 | 3 | 6 | 3 | 2 | Dr. Victor Wilson

Department Head or Program Chair (Type Name & Sign) / Date

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

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
SYLLABUS: Critical Research and Practice Issues in Special Education
EPSY 619

Tuesday 9:25 a.m. – 12:00 p.m.

Quotes from Carl Sagan

“Science is a way of thinking much more than it is a body of knowledge.”

“Absence of evidence is not the evidence of absence”

“Science allows us to let the facts in even when they don’t conform to our preconceptions.”

Contact Information
Dr. Deborah C. Simmons, Professor, Special Education
Department of Educational Psychology, Harrington 637E
Office Hours: Tuesday 12:00 – 1:30, and by appointment
Office Phone: (979) 845-8050
Email: Please use VISTA (elearning) email for all course communications.

Course Description

Welcome to Critical Research and Practice Issues Special Education, a doctoral-level course in the Special Education program. The purpose of this course is to study and examine the historical, conceptual/theoretical, and empirical bases of special education research and practice. The course is designed to (a) broaden your understanding of special education as a field and (b) develop depth of understanding in a particular area of special education. We will also review and apply criteria for evaluating research (single case and group). Toward that end, we will be critically reviewing the state of evidence in special education and the criteria used to evaluate that evidence base. This course cannot examine each topic of special education in depth; however, it is designed to whet your appetite for more. The course is designed as a seminar and requires thorough preparation and participation by all members.

This semester we have a “rockstar” lineup of special education researchers who have agreed to contribute their time to help prepare you as an educational researcher. Seize this opportunity to dig deep, challenge yourself, and broaden your skills and knowledge about the theories that shaped special education, the science that guides the practices of the field, and the individuals and their contributions to the science of special education.

Across the sessions, the following set of questions will be used to frame the course of study:

1. What are prominent pressing issues/problems in the particular area of special education (e.g., soaring high school drop-out rates and implications for students with learning disabilities; stagnant reading scores for adolescent students; critical shortage of highly qualified special education teachers).
2. What is the historical and theoretical context of this issue?
3. What do we know: What is the state of the evidence?
4. What do we need to know? (Where are the blind spots and blank spots in the evidence base?)

Course Format

This is a seminar or form of class organization in higher education in which a group of advanced students meets under the general direction of a faculty member for discussion of topics of mutual interest. Consequently, several forms of class participation are required for class success. These include reading assigned articles and preparing higher-order questions (e.g., evaluate, analyze, synthesize, verify type questions), discussing topics assigned for class, and facilitating class discussions on certain topics.

Course Readings

The readings can be found on http://elearning.tamu.edu. Readings may be modified throughout the course if additional relevant articles are identified. Therefore, please refer to this site frequently for updates.

Course Content

1. Critical Issues in Special Education
2. Who’s Who in Special Education
3. Developing A Research Program
4. Criteria for Evaluating the Evidence Base in Special Education
5. Early Intervention
6. Response to Intervention
7. English Language Learners and Special Education
8. Transition/Secondary Special Education
9. Social/Behavioral Disabilities
10. Adolescent Readers

Course Objectives

Upon completion of this course, students will be able to:

1. Develop an understanding of the historical, contemporary, and future issues and trends impacting the field of Special Education
2. Describe, analyze, synthesize, evaluate, and discuss various educational issues presented in the professional literature in Special Education
3. Critically review (critique) research literature on a particular topic/intervention in Special Education
4. Demonstrate advanced skill in performing in-depth library research techniques, including the distillation of information from multiple sources.
5. Write a professional scholarly paper on a topic or that has an impact on the field of
Course Structure and Requirements

The course is a graduate-level course that will be conducted in seminar format. Students are expected to complete readings prior to class and be prepared to discuss them. All written assignments are to be typed. Weekly assignments may be single-spaced. Research papers must follow recommendations presented in the Publications Manual (5th Ed) of the American Psychological Association.

1. Attendance and Class Participation (20%)
   a. Attend each class session
   b. Develop 2 higher-order questions for assigned readings for guest speakers
   c. Write a thank you letter for a guest speaker that synthesizes group input
   d. Review and provide input on Adolescent Reading module (will be done in pairs)
   e. Complete weekly activity assignments (summary of main ideas from articles [not submitted]: evidence matrix, oral summary of journal article review).

2. Journal Article Reviews (25%): Complete a review of data-based research articles for 5 separate topics. Identify, locate, and review each article and be prepared to present the research questions, participants, design, intervention, findings, and implications the day the topic is discussed in class. Provide a brief (1 page) written summary (single-spaced) for members of the class and the instructor and include the complete APA reference at the top of the page. In your class presentation, discuss why you selected the article, how the article is related to the day’s topic, research questions, and the most interesting findings. Also, provide a brief evaluation of the strength of the research using either group of single-case criteria. Each review is worth 10 points.

Components of the review should be in APA format and include:
   1. Reference Citation (APA, 2001 format)
   2. Research questions/purpose
   3. Summary of participants, design, and intervention
   4. Summary of results and implications
   5. Quality of research (according to group and single case criteria)

3. Research - Topical Paper (40%): A 10-12 page paper that (a) identifies a topic/issue/intervention related to special education (2 pages), (b) describes method of identifying studies (1-2 pages), (c) summarizes/synthesizes “what we know” from a minimum of 5 data-based articles (4-5 pages), and (d) proposes research questions and research to fill in the “blank” spots of research (4-5). Accompanying your paper should be a summary of the quality of research that uses either the Gersten et al. or Horner et al., 2005 criteria. A scoring rubric will be available early in the term. The paper is worth 80 points.

4. Research Presentation (15%): You will make a 30-minute presentation communicating findings from your research paper. Class members will provide feedback and discussion. The week of your presentation, you should bring (a) a bibliography containing key references for your topic. Criteria for evaluation will be presented in class. The presentation is worth 30 points.
Course Policies

1. Attendance: This course will rely on discussion. For this format to succeed, you must be present and on time. If you miss class because of an emergency, please notify the instructor and arrange to get notes from another student in class. One class absence is allowed for emergencies. Class absences (more than one) will result in a 2% reduction in the final course grade (per unexcused absence).

2. Participation: You should be prepared to speak, discuss, analyze, synthesize, and evaluate ideas and content presented through readings and in class. Fifteen percent of your course grade will be allocated to quality participation. That said, being prepared by completing the readings listed on the syllabus prior to class and class participation is very important for you to benefit from this class. Interactions and small group activities depend upon you being thoroughly familiar with the readings and previous class material. Bring the syllabus, textbook, and handouts to every class.

3. Assignments: All assignments must be completed individually, unless otherwise specified by the instructor. Type all assignments unless you’re recording student answers or completing parts of intervention plans. Proofread your papers for spelling and mechanics. Assignments are due on the dates listed in this syllabus at the beginning of class unless otherwise specified. If you have questions or need clarification on assignments, you are encouraged to seek assistance from the instructor via email, phone, or during office hours. Late assignments are discouraged and may be assigned a lower score.

4. If you have a documented disability and anticipate needing accommodations in this course, please make an appointment with the instructor during the first week of the term to verify your disability and to discuss appropriate accommodations.

5. If you have questions about assignments or your progress in the course, I encourage you to contact me as soon as possible.

Grading

Grades are based on a percentage of points earned. A grade of Incomplete will only be given under special circumstances and only in accordance with university policies.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Points</th>
<th>Grade</th>
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<tbody>
<tr>
<td>92-100%</td>
<td>184-200</td>
<td>A</td>
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<tr>
<td>83-91%</td>
<td>166-183</td>
<td>B</td>
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<tr>
<td>74-82%</td>
<td>148-182</td>
<td>C</td>
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<td>65-73%</td>
<td>130-147</td>
<td>D</td>
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<tr>
<td>&lt;65%</td>
<td>129</td>
<td>F</td>
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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

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

All syllabi shall contain a section that states the Aggie Honor Code and refers the student to the Honor Council Rules and Procedures on the web http://www.tamu.edu/aggiehonor.

Text and Readings


<table>
<thead>
<tr>
<th>WEEK and DATE</th>
<th>TOPIC</th>
<th>TENTATIVE ACTIVITY</th>
<th>ASSIGNMENT DUE</th>
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</thead>
<tbody>
<tr>
<td>Week 1 September 1</td>
<td>• Introduction and Overview of Seminar</td>
<td>• Review syllabus</td>
<td>Readings: Polloway (2000) (in class review)</td>
</tr>
<tr>
<td></td>
<td>• Who’s Who in Special Education?</td>
<td>• Introduce topics &amp; evidence framework</td>
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<tr>
<td></td>
<td>• Materials: Evidence framework; syllabus</td>
<td>• Review Center on Instruction website <a href="http://www.centeroninstruction.org">http://www.centeroninstruction.org</a></td>
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<tr>
<td></td>
<td></td>
<td>• Discuss Who’s Who in Special Education</td>
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<tr>
<td>Week 2 September 8</td>
<td>• Guest Researcher: Dr. H. Lee Swanson (11:00)</td>
<td>• Discuss topic for research paper</td>
<td>Assignments</td>
</tr>
<tr>
<td></td>
<td>• Developing A Research Program in Special Education</td>
<td>• Visit and review the CEC website <a href="http://www.cec.sped.org/Content/NavigationMenu/AboutCEC/Communities/Divisions/">http://www.cec.sped.org/Content/NavigationMenu/AboutCEC/Communities/Divisions/</a> and identify a division related to your interests. Identify resources that are available</td>
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<tr>
<td></td>
<td>• Criteria for Group Research</td>
<td>• Review Odom et al. (2005) – What constitutes evidence in special education research?</td>
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<td></td>
<td>• Materials: Chard et al., quality indicators table (group research)</td>
<td>• Gersten et al. (2005). What are the criteria for quality experimental studies?</td>
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<td>• Review summary table for group research (Chard et al., 2009)</td>
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<td>• Discuss Swanson’s recommendations for developing a program of research? Which criteria are still relevant? What criteria should be added?</td>
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Readings
Swanson (1993); Gersten, Fuchs, Compton, Coyne, Greenwood, C., & Inancenti (2005); Odom et al., (2005); optional reading: Nihalani & Mayrath, 2008.
<table>
<thead>
<tr>
<th>Week 3</th>
<th>September 15</th>
<th>Review/Assigned Readings</th>
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<tr>
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<td>- Review criteria for evaluating single-case research (Horner et al., 2005)</td>
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<td>- Apply single-case criteria (see Chard table) to Schneider &amp; Goldstein article</td>
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<td>- Introduction to Early Childhood Special Education - Theory of Practice in Early Intervention</td>
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<td></td>
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<td>- What are the critical characteristics of early intervention?</td>
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<tr>
<th>Week 4</th>
<th>September 22</th>
<th>Critical Issues in Early Childhood Special Education</th>
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<tbody>
<tr>
<td></td>
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<td>Guest Researcher (10:00 - 11:15 a.m.)</td>
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<td>- Review/discuss assigned readings</td>
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<td>- Did policy precede evidence in RtI?</td>
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<td></td>
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<td>- What are the critical features of RtI?</td>
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<td></td>
<td>- Define prevention/intervention and its levels</td>
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<td></td>
<td>- Identify critical issues in prevention/intervention</td>
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<td></td>
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<td>- Identify lingering questions (blank spots) in research on effective interventions for students with learning disabilities</td>
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<td></td>
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<td>- Evaluate Fletcher and Denton article according to group design criteria</td>
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<tr>
<td></td>
<td></td>
<td>- Review Evidence Framework</td>
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<tr>
<th>Week 5</th>
<th>September 29</th>
<th>Assignments</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. Develop summary of assigned readings (not to be submitted)</td>
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<td>2. Begin Evidence Framework for Early Childhood</td>
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<td></td>
<td>3. Review of Schneider &amp; Goldstein Article (2009)</td>
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<tr>
<td></td>
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<td>4. Develop questions for Dr. Carta due Friday, Sept. 18.</td>
</tr>
</tbody>
</table>

Readings:
- Odom & Wolery (2003); Horner et al. (2005); Schneider & Goldstein (2009)
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Activity</th>
<th>Assignments</th>
<th>Readings</th>
</tr>
</thead>
</table>
| 6    | October 6  | Response to Intervention: Guest Researcher - Dr. Douglas Fuchs            | • Review of Assigned Readings  
• Complete Evidence Matrix in RtI  
• Guest Researcher: Dr. Doug Fuchs (10:00 – 11:00) | Readings: TBA                                                              |
| 7    | October 13 | Adolescent Literacy                                                      | • Review of Assigned Readings  
• What are the critical issues of adolescent literacy?  
• Critique of Center on Instruction Materials                      | Assignment:  
1. Review Center on Instruction modules for Adolescent Reading and prepare summary. May be done in pairs.  
Readings: Scammaca et al. (2007); Kamil et al. (2008) | |
| 8    | October 20 | Critical Issues in Transition/Secondary Special Education  
Guest Researcher: Dr. Michael Wehmeyer | • Review of Assigned Readings  
• Complete Evidence Matrix on Transition/Secondary Special Education  
• Discuss article reviews. | Assignment:  
1. Locate and review online vita for Dr. Michael Wehmeyer  
2. Submit 2 questions from readings by Friday, October 16.  
3. Present self identified research article review #3  
<p>| 9    | October 27 | Research Project                                                          | • Individual Meetings with Dr. Simmons to review research articles and research paper. | Schedule 30 minute meeting with Dr. |</p>
<table>
<thead>
<tr>
<th>Week</th>
<th>ELL</th>
<th>Assignments</th>
<th>Readings</th>
</tr>
</thead>
</table>
| Week 10 | ELL | • Review/discuss assigned readings  
• What are the critical issues for ELL/LD  
• What is the strength of the evidence base for ELL?  
• Compare and contrast emphasis and findings from the IES ELL Practice Guide and the Center on Instruction ELL Guide.  
| Week 11 | ELL | Guest Researcher: Dr. Peggy McCardle  
• Review of Assigned Readings  
• Complete Evidence Matrix on ELL  
• Guest Researcher: Dr. Peggy McCardle  
• Student Presentation Option | |
| Week 12 | Social Behavior Dr. Hill Walker | • Review of Assigned Readings  
• Complete Evidence Matrix  
• Guest Researcher: Dr. Hill Walker  
• Student Presentation Option | |
Week 13
November 24
Student presentations

Week 14
December 1
Student presentations

Additional Web Resources

Council for Exceptional Children: http://www.cec.sped.org
Center on Instruction: http://www.centeroninstruction.org.

Rubric Article Review

Use the following criteria to evaluate your article reviews.

<table>
<thead>
<tr>
<th>Objective/Criteria</th>
<th>Performance Indicators</th>
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</thead>
<tbody>
<tr>
<td>Citation in APA format.</td>
<td>No information provided</td>
</tr>
<tr>
<td>Article relevant to topic and either single case or group design</td>
<td>Partial or Some Inaccurate Information Provided</td>
</tr>
<tr>
<td>Summary of research questions, participants, design, primary findings, &amp; implications.</td>
<td>Complete and accurate information provided.</td>
</tr>
<tr>
<td>Evaluation of quality of research indicating strengths and weaknesses according to criteria (Gersten et al. or Horner et al.)</td>
<td>cut of 10</td>
</tr>
</tbody>
</table>

Readings: TBA; Landrum, Tankersley, & Kauffman (2003).

Review #5
July, 15, 2010

MEMORANDUM

TO: Dr. Karen Butler-Purry

FROM: James B. Kracht

SUBJECT: GC/GOC Agenda Item

The College of Education and Human Development would like GC/GOC to review the attached new course at its next meeting.
May 24, 2010

MEMORANDUM

TO: Graduate Instruction Committee, CEHD

THROUGH: Dr. Jim Kracht
Associate Dean for Academic Affairs

THROUGH: Dr. Victor Willson
Department Head, EPSY

FROM: Dr. Michael Benz
Special Education Program Coordinator

SUBJECT: New Course – SPED 619

Attached please find the appropriate paperwork for the establishing of a new course, SPED 619, in the Department of Educational Psychology.

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

1. Rationale: The purpose of this memo is to request that a previously offered doctoral seminar, EPSY 690, be officially changed to a formal course, SPED 619. The Special Education doctoral program has always had seminars; however, historically, these courses were not offered consistently as the full-time doctoral enrollment fluctuated. Over the past several years, the SPED doctoral program enrollment has increased and stabilized enabling us to offer a more predictable schedule of courses. The proposed course is a requirement of the SPED doctoral program. Based on a stable enrollment of doctoral students, we recommend that the course previously offered as a doctoral seminar in EPSY be changed to a formal course offering. SPED 619. The content and competencies of SPED 619 are essential to the SPED doctoral program. The purpose of SPED 619 is to study and examine the historical, conceptual/theoretical, and empirical bases of special education research and practice. The course is designed to (a) broaden students' understanding of special
education as a field and (b) develop depth of understanding in a particular area of special education. In addition, students review and apply criteria for evaluating research (single case and group). Students critically review the state of evidence in special education and the criteria used to evaluate that evidence base.

2. Vote by the Program: This course is a required component of the SPED doctoral program. It has the unanimous support of the Special Education program faculty.

We appreciate your consideration of this course. Please contact me 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.

Form Instructions

1. Request submitted by (Department or Program Name): VTPP, Veterinary Physiology & Pharmacology

2. Course prefix, number and complete title of course: VTPP 638, Analysis of Genomic Signals

3. Catalog course description (not to exceed 50 words): Overview of current high throughput technology for data acquisition and analysis of genomic signals (e.g. mRNA or proteins); emphasis on the microarray technology, methods for analyzing microarray data, and approaches to model the underlying phenomena from the systems biology perspective.

4. Prerequisite(s): BIOL 451 or GENE/BIMS 320 or equivalent; STAT 651 or equivalent; or instructor approval

Cross-listed with: 

Stacked with: VTPP 438

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 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)

Biomedical Science, M.S. in Toxicology, Nutrition, Animal/Plant Genetics; Ph.D. in Toxicology, Nutrition, Animal/Plant Genetics, Electrical and Computer 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) |
--- | --- | --- |
VTPP | 638 | ANALYSIS OF GENOMIC SIGNALS |

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CPU and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>FICC Code</th>
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<td>2</td>
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</table>

Approval recommended by:

Glen A. Laine
Department Head or Program Chair (Type Name & Sign) Date

Jane Webb
Chair, College Review Committee

Bhanu Chowdhury
Dean of College

Mark J. Zorin
Chair, GC or UCC

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 – 3/10
Course title and number: Analysis of Genomic Signals, VTPP 638
Term: Fall 2010
Meeting times and location: TR 03:40PM-05:40PM, VMR 423

Course Description and Prerequisites

An overview of the current high throughput technology for data acquisition and analysis of genomic signals, e.g. mRNA or proteins. A special emphasis is placed on the existing high throughput platforms for acquiring and analyzing DNA, mRNA, protein or metabolites data, and on different approaches to model the underlying phenomena from the systems biology perspective. Examples of DNA related data are SNP and CGH platforms. Examples for mRNA related data are the ‘classical’ total mRNA arrays, RNAi - gene silencing using siRNA or miRNA arrays.

Prerequisites: BIOL 451 or GENE/BIMS 320 or equivalent; STAT 651 or equivalent; or instructor approval.

This course is stacked with VTPP 438. As a graduate level course it has different expectations for the student performance, requires from the graduate students to learn extra topics (see Course Topics, Calendar of Activities below), and to successfully complete a research project. The course grading policy is substantially different from its undergraduate counterpart (see Attendance and Grading Policies below).

Learning Outcomes or Course Objectives

By the end of the course students should have an understanding about:

- Current microarray technology and what microarrays can be used for.
- Normalization and quality control of microarray data.
- Unsupervised and supervised analysis methods.
- Analyzing microarray data together with other data.
- The work-flow of microarray experimentation and using databases to store microarray data.
- How to implement an analysis method as a computer program.
- Available software for analysis of microarray data, and the limitations of using it.
- Different kinds of genomic signals and available technology for data acquisition, storage and analysis.

Instructor Information

Name: Ivan Ivanov
Telephone number: 979-862-3192
Email address: ivanov@cvm.tamu.edu
Office hours: TR 2:30 PM – 3:30 PM
Office location: VMR 422C
Textbook and/or Resource Material

Bioinformatics by D.R. Westhead, J.H. Parish and R.M. Twyman
Bioinformatics and Functional Genomics, by Jonathan Pevsner
Class notes: Distributed in class.

Attendance and Grading Policies

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

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

Students will be evaluated based on:

a) Class quizzes - once every three weeks (20%)
b) Student paper presentations (30%)
c) Research Project (30%)
c) Exam – December 2, 2010 (20%)

Late work will be accepted only if there is an approved absence, http://student-rules.tamu.edu

Course Topics, Calendar of Activities

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
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<tbody>
<tr>
<td>1</td>
<td>Review of the necessary background from biology and basic statistical techniques for data analysis.</td>
<td>Class notes</td>
</tr>
<tr>
<td>2</td>
<td>DNA microarray technology and use of microarrays.</td>
<td>Class notes</td>
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<tr>
<td>3</td>
<td>Work-flow of microarray experimentation and using databases to store microarray data.</td>
<td>Class notes</td>
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<td>4</td>
<td>Microarray data: representation, normalization, quality filtering, and distances.</td>
<td>Class notes</td>
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<td>5</td>
<td>Dimensionality issues for microarray data: dimensionality reduction and clustering; the ‘curse’ of dimensionality.</td>
<td>Class notes</td>
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<td>6</td>
<td>Discriminatory gene statistics.</td>
<td>Class notes</td>
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<td>7</td>
<td>Classification: training and validation. The number of samples needed in an experiment.</td>
<td>Class notes</td>
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<td>8</td>
<td>Machine learning approaches: advantages and limitations.</td>
<td>Class notes</td>
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<td>9</td>
<td>Integrating expression data with other data: types of data, functional annotation, and genome sequence data.</td>
<td>Class notes</td>
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<tr>
<td>10</td>
<td>Available software for analysis of microarray data.</td>
<td>Class notes</td>
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</tbody>
</table>
11 Protein data analysis. Class notes
12 Systems biology. Class notes
13 Different approaches for modeling biological phenomena. Class notes
14 Network models of genomic regulation. Class notes

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."

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 excuse any member of the TAMU community from the requirements or the processes of the Honor System.