1. **Discussion Items:**
   a. Graduate Council Chair-Vice Chair
   b. Baccalaureate Equivalency Subcommittee Process
   c. Graduate Student Responsible Conduct of Research

2. **New Course Requests:**
   a. BMEN 606 Medical Device Path to Market
   b. MARA 693 International Maritime Industry Graduate Management Experience
   c. MSEN 612 Fundamentals of Transmission Electron Microscopy
   d. MSEN 613 Advanced Transmission Electron Microscope and Methodologies in Life and Materials Science
   e. MSEN 614 Fundamentals of scanning Electron Microscopy and Environmental Scanning Electron Microscopy
   f. MSEN 618 Composite Materials Processing and Performance
   g. MSEN 626 Polymer Laboratories
   h. SOCI 640 Sociology of Development
   i. SPED 603 Foundations of Special Education
   j. VTMI 604 Amazon Field School

3. **Course Change Requests:**
   a. BIOL 611 Molecular Biology of Differentiation and Development

4. **Special Consideration Items:**
   a. Distance Education Master of Engineering in Engineering
   b. Master of Financial Management
New Courses
Departmental Request for a New Course
Undergraduate • Graduate • Professional

Form Instructions

1. Course request type: □ Undergraduate  □ Graduate  □ Yes Professional (e.g., PhD, JD, MD, etc.)
2. Request submitted by (Department or Program Name): Biomedical Engineering
3. Course prefix, number and complete title of course: BMEN 606 - MEDICAL DEVICE PATH TO MARKET
4. Catalog course description (not to exceed 50 words): Because the medical device industry operates within a highly regulated, global environment, this course focuses on the path to market for a medical device with specific attention to the regulatory affairs so to enable the development of an appropriate regulatory strategy.

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

6. Is this a variable credit course? □ Yes  □ No
   If yes, from _________ to __________

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

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

9. 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 Biomedical Engineering

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

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

12. Prefix  Course #  Title (excluding punctuation)
    BMEN  606  MED DEVICE PATH TO MRKT

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

   Approval recommended by: Gerard L. Coté
   Date  7-15-14

   Department Head or Program Chair (Type Name & Sign) Date Chair, College Review Committee
   Date  8/14/14

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

   Submitted to Coordinating Board by: Chair, GC or UCC
   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 – 04/14
Course number and title  BMEN 606 Medical Device Path to Market
Term  TBA
Meeting times and location  TBA, TBA

Course Description
The medical device industry operates within a highly regulated, global environment. This course is focused on the path to market for a medical device with specific attention to the regulatory affairs so to enable the development of an appropriate regulatory strategy.

Prerequisites: Graduate classification or permission of instructor

Course Objectives

1. Students will be able to use the fundamental elements and development of an effective regulatory strategy for commercialization of a medical device invention.

2. Students will be able to identify and describe the basic test method designs which are acceptable to the regulatory bodies of US, Canada, and Europe.

3. Students will be able to list the basic requirements for initiating a human clinical trial in the US and OUS markets.

4. Students will be able to identify, classify, and describe the basic regulations and associated requirements and enforcements for market approval in the US and OUS markets.

5. Students will be able to list the current post-market activities required by FDA (US markets).

Instructor Information

Name  Maurice A. Brewer
Email address  abrewer@bme.tamu.edu
Office hours  TBA and as arranged via email
Office location  TBA
Required Text:  None
Class Topics and Dates

Subject to change, however, topics of each week are expected to be as follows:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview: Introduction to Regulatory Affairs, Regulatory Law, and Associated Regulatory Bodies</td>
</tr>
<tr>
<td>2-4</td>
<td>Module 1 Regulatory Strategy</td>
</tr>
<tr>
<td>5-6</td>
<td>Module 2 Design and Manufacture: Invention, Proof-of-concept testing, Design, and Manufacture</td>
</tr>
<tr>
<td>7-8</td>
<td>Module 3 Preclinical Testing: Pre-GLP and GLP studies in laboratory animals</td>
</tr>
<tr>
<td>9-10</td>
<td>Module 4 Clinical Strategies and Trials: Clinical trial plans, IDEs, IRBs, and GCP</td>
</tr>
<tr>
<td>11-13</td>
<td>Module 5 Commercial Approval: PMA requirements, CE Mark requirements, Advertising and Promotion</td>
</tr>
<tr>
<td>14-15</td>
<td>Module 6 Post Market Activities: Medical device reporting, register, and post-market studies</td>
</tr>
</tbody>
</table>

Grading Policies:
Work missed due to absences will only be excused for University-approved activities in accordance with Texas A&M University Student Rules (http://student-rules.tamu.edu/). Specific arrangements for make-up work in such instances will be handled on a case-by-case basis.

- Midterm exam: 30% - Final exam: 30% - Term project: 20% - Development of test case: 20% - regulatory strategy: 30%

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 to 100%</td>
<td>A</td>
</tr>
<tr>
<td>80 to 89%</td>
<td>B</td>
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<tr>
<td>70 to 79%</td>
<td>C</td>
</tr>
<tr>
<td>60 to 69%</td>
<td>D</td>
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<tr>
<td>&lt;60%</td>
<td>F</td>
</tr>
</tbody>
</table>

Americans with Disabilities Act (ADA)

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

Academic Integrity

"An Aggie does not lie, cheat or steal, or tolerate those who do." For more information on Honor Council Rules and Procedures, go to: http://aggiehonor.tamu.edu/
Texas A&M University
Departmental Request for a New Course
Undergraduate □ Graduate □ Professional □ First Professional (e.g., DVM, JD, MD, etc.)
Submit original form and attach a course syllabus.

Catalog course description (not to exceed 50 words):
Combines classroom and graduate research work with international travel and provides the student direct contact with maritime industry managers. The trip emphasizes cultural and historical aspects of the maritime industry outside of the United States providing a better understanding of differing management styles, business practices and regulatory focus.

Prerequisite(s):
Cross-listed with: MARA 493

If this a variable credit course? Yes □ No
If yes, from ___ to ___

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

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

This course will be:
A) required for students enrolled in the following degree program(s) (e.g. B.A. in history)
N/A
B) an elective for students enrolled in the following degree program(s) (e.g. M.S., Ph.D. in geography)
Master of Maritime Administration and Logistics

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

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

Prefix: Course #: Title (excluding punctuation): MARA 693 Intl Maritime mgmt grad exp

<table>
<thead>
<tr>
<th>Lect</th>
<th>Lab</th>
<th>Std</th>
<th>CPF</th>
<th>Printed Credit Code</th>
<th>Admin Unit</th>
<th>Acct Year</th>
<th>Unit Code</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0</td>
<td>035</td>
<td>1814</td>
<td>15</td>
<td>16010298</td>
</tr>
</tbody>
</table>

Approval recommended by:

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

Dean of College Date

Chair, College Review Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 04/14
Texas A & M University at Galveston
Course Syllabus
MARA 693– International Maritime Industry Management Experience
Maymester, 2015
Department of Maritime Administration

INSTRUCTOR
Joan P. Mileski, Ph.D.

MEETING TIMES AND PLACE
London, England UK

LEAD INSTRUCTOR INFORMATION
E-mail: mileskij@tamug.edu
Office Phone: 409-740-4978
Office Location: CLB 229
Office Hours: Tuesdays and Thursdays from 1:00pm to 1:50 pm and Mondays, Wednesdays
Fridays by appointment. I am typically in my office more than the listed hours. As such, I often
have multiple distractions and perform several different functions. Therefore, if you need
extended time or a personal/private conference, please make an appointment so I can commit the
amount of time needed.
Web information: We use eCampus for all notes and facebook for all information
Contacting students: The department will use your on-campus Email address as the primary
means of contacting you. Please check your email daily.

TEXTBOOK
Course Text Articles as assigned by instructors prior to departure
Supplementary Text None
Other Required Materials None

COURSE DESCRIPTION
This course combines classroom work with international travel and provides the student direct contact
with industry managers and regulators in the international maritime industry. The two week long
international trip emphasizes cultural and historical aspects of the maritime industry outside of the United
States providing a better understanding of differing management styles, business practices and regulatory
focus. (ICD credit)

COURSE SEQUENCE IN CURRICULUM
This course is an elective course for the Maritime Administration major.
COURSE OBJECTIVES
This is a high impact course in the regulatory and business environment of the international maritime industry. London is the home of the International Maritime Organization (IMO) which regulates the global industry. Further, London is one of the world capitals on maritime commerce with business organizations in ship design, building, ownership, insurance and finance. Further, many maritime NGOs are also headquartered there.

LEARNING OBJECTIVES:

This course has five broad objectives (for a course in UK). The student will be able to…….

First, fully explain the maritime business industry cluster in the EU and in particular the UK.

Second, compare and contrast maritime business in the U.S. with maritime business in the EU/UK.

Third, demonstrate knowledge of the culture and history of the maritime law and business in the UK and its influence on U.S. maritime operations.

Fourth, describe the importance of the UK in development of maritime industry regulation.

Fifth, evaluate issues facing the organization and strategies employed by UK maritime organizations through face-to-face questioning of top management.

TOPICAL OUTLINE
Session/Date Tentative Schedule (Schedule is subject to change due to unforeseen circumstances)
April 20 Review syllabus, discuss course expectations, discuss safety and behavior expectations.
May 16 Depart for London from Houston Terminal E 8:50 pm
May 17 Arrive in London Heathrow, Terminal 4 12:05 pm
Queen’s Park Hotel
48 Queensborough Terrace
London
W2 3SJ
http://www.queensparkhotel.com
Rest of day free
May 18 Business attire
Baltic Exchange with Bill Lines at 10 am
38 St Mary Axe, London EC3A 8BH, United Kingdom
+44 20 8858 4422
Shell Trading and Transportation with David Cudbertson at 13:30
80 Strand London WC2R 0ZA United Kingdom
May 19 Business casual attire
Greenwich at 10:00 am
Maritime Museum
Park Row, Greenwich, London SE10 9NF, United Kingdom
44 20 8858 4422

Royal Observatory
Blackheath Ave, London SE10 8XJ, United Kingdom
+44 20 8858 4422

Cuttsark
King William Walk, London SE10 9HT, United Kingdom
+44 20 8858 4422

Aaron Bigbee at 4:30 pm in Mayfair

May 20
Business Casual
International Transportation Workers Federation (ITF) at 14:00
With Steve Trowsdale
49-60 Borough Rd, London SE1 1DR
44 (0) 20 7403 2733

May 21
Business attire
Lloyds Register with Barbara Jones at 9:30 am
71st Fenchurch Streeen, London Ec3M 4BS, UK
+44(0)20 7423 2077

International Maritime Organization (IMO) with Berty Nayna at 2:00pm
4 Albert Embankment, Lambeth, London SE1 7SR, United Kingdom
+44 20 74634003

May 22
Business Casual attire
Chartered boat tour of working Port of London with Martin Garside at 1045
61 Trinity Buoy Wharf London E14 0FP
(44) 20 7001 2211
*Lunch Provided*

May 23
Casual attire
Tower of London at 10:00
London EC3N 4AB, United Kingdom
+44 844 482 7777

May 24
open

May 25
Business attire
Lloyds of London with Peter Fletcher at 10:30 am
1 Lime St, London EC3M 7HA, United Kingdom
44 (0)20 7327 1000

Churchill War Rooms at 14:30
Clive Steps, King Charles St, London SW1A 2AQ, United Kingdom
+44 20 7930 6961

May 26
Business casual attire
Portsmouth dockyards
Victory Gate, HM Naval Base, Portsmouth PO1 3LJ, United Kingdom
+44 23 9283 9766

Winchester Cathedral
9 The Close, Winchester, Hampshire SO23 9LS, United Kingdom
+44 1962 857200

May 27
Business casual attire
Royal Courts of Justice with Pat Rowe at 11:00 am
Strand, London WC2A 2LL, United Kingdom
+44 20 7947 6000

Victoria Palace Theatre “Billy Elliot” at 1930
Victoria St, London SW1E 5EA, United Kingdom
+44 20 7492 9968

May 28
Business attire
Clarksons with Trevor Crowe at 11:00 am
St. Magnus House 3 Lower Thames Street London United Kingdom EC3RA 6HE
(44) (0)20 7334 0000

Morgan Stanley with Tom Hewitson at 15:00
25 Cabot Square, Canary Wharf, London E14 4QA, United Kingdom
+44 20 7425 8000

May 29
Business casual attire
House of Parliament at 9:20 am
Palace of Westminster London SW1A 2PW, United Kingdom
44 20 7291 9825

Westminster Cathedral at 2:00 pm
42 Francis St, London SW1P 1QW, United Kingdom
+44 20 7798 9055

May 30
Depart London 11:40 am Heathrow Terminal 4 and return to Houston 4:25 pm
Terminal E

For further in-progress trips, see attachment at end of syllabus

Teaching Strategies
This is an activities-driven. Students must be prepared to discuss and question presenters and other representative of the organization we visit. Our philosophy for the learning environment is the role of the professor as director of learning among equals. The relationship is a partnership where each, professor and student, are fully prepared for and enthusiastically embrace, each and every learning experience. We believe that insight (truth) can be an exciting experience for faculty and students alike. We try to instill in students that they must be their own lifetime teachers continuously gathering and discarding the appropriate skill sets for life long learning, success, and service to society.

Assessment of Learning:
Evaluation Methods:

A. Course Requirements:

1. Participation in all business visits.

The entire class is designed to prepare you to ask insightful questions during our business visits based upon research you will do on each organization prior to our visit. Your grade will be awarded based on the quantity and quality of questions and your professionalism during the entire visit abroad. Everyone is expected to act in a manner consistent with understanding that you are guests of the British people and that the laws and social rules of UK apply. Further, in light of the risk of terrorism you are expected to follow all rules imposed on us during the visits and travel.

There will be a strong emphasis on daily preparation and participation. You must be fully prepared to discuss issues prepared for each visit. Since the participation is crucial for students' learning, attendance is mandatory for all activities. Several students will be randomly nominated to help lead discussions on the organization. Students are evaluated for the participation according to the quality and persistence in their discussion and their attendance. Absences will affect a student's final grade.

2. Paper experience

There will be one project. Each student will write a paper on analyzing the impact the visit had on his/her understanding of the maritime industry issue and the UK culture. The paper must address the impact the trip had on the strategy for your career in the industry.

B. Grading Standards

<table>
<thead>
<tr>
<th>Written Report</th>
<th>50 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>20 points</td>
</tr>
<tr>
<td>Discussion participation</td>
<td>30 points</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

Each project and all class participation will be given one of the following letter grades:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numerical equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>below 60</td>
</tr>
</tbody>
</table>

Grading is one of the most sensitive issues a faculty member faces. Fairness in grading is the guiding objective but this has many dimensions (e.g. a student has a right to be tested only on material available through the syllabus or lectures up through the time of the examination; students in the same class should not be treated differently; students who have legitimate absences should be offered a chance to make-up their examination, etc.) One paradox is that objective examinations (e.g. multiple choice) are, by definition, less prone to unfairness in grading than subjective (essay) examinations and cases, yet are often viewed by students as an unfair test of their knowledge of courses in which the critical parts have subjective content (e.g. decision making processes). Also a resource constraint exists: students are entitled to a careful reading of their essays but limited faculty time must be allocated over many competing uses.
There is no solution to this dilemma, just uneasy compromises. The system of grading and examination in this course has evolved through the suggestions of students. Please provide me your thoughts for improvement.

**Statement of Course Evaluations:**
The Pica (Personalized Instructor/Course Appraisal) is an online course evaluation for Texas A & M. We highly encourage you to complete an evaluation for each course on your schedule. Student input is a critical component used to improve curriculum and teaching. Each faculty member values your input to improve his/her methodology. Your comments can also significantly impact the mix and membership of the faculty. The PICA website is available at [http://pica.tamu.edu](http://pica.tamu.edu), your howdy portal, or by scanning the block notes around campus.

**CLASS POLICIES:**
**Academic honesty**

**AGGIE HONOR CODE**

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

Upon accepting admission to Texas A & M University at Galveston, 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 TAMUG community from the requirements or the processes of the TAMUG Honor System.

For additional information please visit: [http://www.tamug.edu/honorsystem/](http://www.tamug.edu/honorsystem/)

**Statement on the Americans with Disabilities Act (ADA) of 1990**
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 Counseling Office, Northern Student Center, or call (409)740-4587.

For additional information visit [http://www.tamug.edu/counsel/dssprocedure.htm](http://www.tamug.edu/counsel/dssprocedure.htm).

**Statement on the Family Educational Rights and Privacy Act (FERPA)**
FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. To obtain a listing of directory information or to place a hold on any or all of this information, please consult the Admissions & Records Office.

Items that can never be identified as public information are a student’s social security number or institutional identification number, citizenship, gender, grades, GPA, or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

**Use of Cell Phone, Blackberries, Laptops, etc.**
The inappropriate use of electronic devices will reflect poorly on your attendance grade.

**Statement on Absences**
Information concerning absences is contained in the University Student Rules Section 7. The University views class attendance as an individual student responsibility. All students are expected to attend class and to complete all assignments. Please consult the University Student Rules for reasons for excused absences, detailed procedures and deadlines as well as student grievance procedures (Part III, Section 45).

Discussion Atmosphere
Any true discussion involves personal exposure and risk. Your ideas may not agree with others. However, respect is required from you and thus will be given to you. Rudeness in any fashion will not be tolerated and will result in expulsion from the meeting.

Negotiation
Any and all of the above except academic integrity is negotiable as a class with the instructors.

ADDITIONAL COMMENTS REGARDING THE SIGNIFICANCE OF THE COURSE IN TERMS OF HISTORY, MOMENT, MOVEMENT, TRENDS, TIMELINES, BODY OF BASIC KNOWLEDGE, ETC.
None
The content of this outline and the attached schedule are subject to change at the discretion of the professors.

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

Form Instructions

1. Course request type:
   □ Undergraduate  □ Graduate  □ First Professional (e.g., DVM, JD, MD, etc.)

2. Request submitted by (Department or Program Name):
   Department of Materials Science and Engineering

3. Course prefix, number and complete title of course:
   MSEN 612 Fundamentals of Transmission Electron Microscopy

4. Catalog course description (not to exceed 50 words):
   State-of-the-art fundamentals in TEM; theoretical background supporting a strong
   hands-on course component comprising specimen preparation and image acquisition/interpretation; practical experience to attain
   a proficiency level permitting independent operation of one of the transmission electron microscopes in the Microscopy and Imaging Center.

5. Prerequisite(s):
   Instructor approval; students are required to write a half-page summary describing the specific problem they wish to
   resolve using electron microscope; graduate classification.

   Cross-listed with:  BIOL 602  Stacked with:
   Cross-listed courses require the signature of both department heads.

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

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

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

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

M.S., Ph.D., Materials Science and Engineering

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

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

12. Prefix  Course #  Title (excluding punctuation)
    MSEN  612  Fundamentals of TEM

    Lect.  Lab  SCL  CIP and Fund Code  Admin. Unit  Acad. Year  FICE Code
    0  2  6  0  3  4  1  1  0  1  0  0  0  2  1  8  6  4  1  5  1  6  0  0  3  6  3  2

    Approval recommended by:

    Level 6

    Thomas D. McKnight
    Department Head of Program Chair (Type Name & Sign)  Date

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

    Submitted to Coordinating Board by:

    Chair, GC or UCC
    Date

    Date
    Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 04/14
BIOL 602 / MSEN 612

TEM I: Fundamentals of Transmission Electron Microscopy (3 credits)
Fall 2016

<table>
<thead>
<tr>
<th>Instructor</th>
<th>e-mail</th>
<th>telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Andreas Holzenburg</td>
<td><a href="mailto:holzen@tamu.edu">holzen@tamu.edu</a></td>
<td>845-1129</td>
</tr>
<tr>
<td>Dr. Hansoo Kim</td>
<td><a href="mailto:luminesc@tamu.edu">luminesc@tamu.edu</a></td>
<td>845-1129</td>
</tr>
<tr>
<td>Mr. Rick Littleton</td>
<td><a href="mailto:rick-littleton@tamu.edu">rick-littleton@tamu.edu</a></td>
<td>845-1129</td>
</tr>
<tr>
<td>Dr. Michael Pendleton</td>
<td>mi <a href="mailto:kep@tamu.edu">kep@tamu.edu</a></td>
<td>845-1129</td>
</tr>
</tbody>
</table>

Office hours:
Tuesday and Thursday, 1:00 to 5:00 p.m.

Location

Course Description:
State-of-the-art fundamentals in TEM; theoretical background supporting a strong hands-on course component comprising specimen preparation and image acquisition/interpretation; practical experience to attain a proficiency level permitting independent operation of one of the transmission electron microscopes in the Microscopy and Imaging Center.

Prerequisites:
The course is suitable for students in both Life and Material Sciences. Please note that due to limited beam time and number of microscopes available, enrollment is limited. Prospective students are required to write a half-page summary describing the specific problem they wish to resolve using transmission electron microscopy.

Course format:
Lectures and Laboratories: Integrated over the entire semester, there will be two one-hour theory sessions per week as well as a three-hour laboratory (e.g. Tuesday and Thursday, 2-5 p.m. and other slots to be determined with the individual instructor). This format permits sufficient familiarization time with the electron microscopes as well as time to assimilate the required theoretical background knowledge while keeping an overall workload compatible with a 3-credit course. The laboratories each week will involve demonstrations by the MIC staff and hands-on experience by each student at each laboratory. Laboratory handouts will be provided by the MIC staff as necessary. Following the training and practice sessions, each student will be required to pass an instrument exam which grants the student independent operation of that instrument. Two hours free instrument time per week are granted to each registered student who has successfully completed the instrument exam. The course will conclude with a poster presentation relating to the student’s research project.

Homework:
Each student is required to prepare a poster describing a basic structural analysis of their specimen examined in the TEM during the course. The poster should comprise three sections:
introduction, materials & methods and results & discussion (including presentations of micrographs, EM-specific annotations, figure legends, image interpretation etc.).

Reading Material:
Lectures will be supplemented by handouts and the eBook available through the Texas A & M libraries (or a hardcopy if the student wishes to purchase it) Bozzola, J. J. and Russell, L. D. 1999. *Electron microscopy principles and techniques for biologists*. Jones and Bartlett Publishers. [It is possible to purchase discounted copies from Amazon.com.]
N.B. This text is also appropriate for TEM beginners from the Material Sciences.

**eBook info:** http://web.ebscohost.com/ehost/detail?sid=9e52b884-f9ef-4277-ab84-0a50f3c3e7fd%40sessionmgr104&vid=1&hid=107&bdata=JnNpdGU9ZWhvc3QtbgIzZQ%3d%3d&sid=9e52b884-f9ef-4277-ab84-0a50f3c3e7fd%40sessionmgr104&vid=1&hid=107&bdata=JnNpdGU9ZWhvc3QtbgIzZQ%3d%3d

Grading:
There are three pieces of assessed coursework: the poster (accounting for 25% of the grade), a written exam (accounting for 45%), and a successful instrument exam (practical exam conducted on the microscope) accounting for 30% of the final grade. Being eligible for the practical examination is contingent upon passing the written exam. The minimum score is 60%. Only one re-take within one week is allowed, and the maximum score for a re-take exam is 60%. Please note, in order to pass the course, a student must have passed the written exam as well as the instrument exam. The latter means that the candidate has been found to be properly qualified to independently operate one of the TEMs. This will be confirmed by a certificate handed out to the student.

Grading scale
A = 90 and more
B = 80 – 89
C = 70 – 79
D = 60 – 69
F < 60

Learning outcomes
Students will gain sufficient proficiency in sample preparation, image acquisition and interpretation and transmission electron microscope preparation to independently operate the microscope to a level that contributes to the accomplishment of their research needs.

Class Schedule (by week)

1. Welcome and introduction to the course and TEM
   - Course structure, overview of TEM: history, instrumentation components, resolution, focusing, specimen requirements, documentation.
   **LAB:** First TEM demonstration:
- Biological sample;
- Material sample: Amorphous and crystalline materials.

2. Safety first
- Overview of laboratory safety as it applies to transmission electron microscopy
LAB: Grid preparation: Preparation of support films and holey grids for alignment; use of the Cressington R308 vacuum coater.

3. Data recording and presentation
- Selection of electron micrographs, calibrated magnifications, photography, digital imaging.
LAB: Basic TEM operation, image acquisition and basic image processing.

4. Electron sources and Vacuum Systems
- Tungsten; LaB₆; FEG.
- Mechanical pumps; diffusion pumps; turbomolecular pumps; ion getter pumps.
LAB: TEM operation.

5. Electron optics and interaction of electrons with matter
- Construction of TEM; lenses; apertures; interaction of electrons with matter: elastic scattering and inelastic scattering, beam damage, accelerating voltage and resolution
LAB: TEM operation and alignment.

6. Basic alignment of TEM
- Alignment of electron gun, condenser lens, objective lens.
LAB: TEM practice and alignment.

7. Theory review
- Relating theory to practical aspects.
LAB: TEM operation.

8. Written Exam (1.5h)

9. Basic specimen preparation techniques
- Biological sample;
- Materials sample.
LAB: Sample preparation
- Preparation of biological sample by negative staining and examination in the TEM;
- Preparation of material samples by crushing powders and deposition onto carbon-coated grids followed by examination in the TEM.

10. Troubleshooting: Questions and answers
- no beam, beam instabilities, vacuum problems, low contrast, dark room issues
LAB: Specimen preparation of students’ own specimens and examination in the TEM
11.-15. Application-oriented theory sessions:
- Specialized and student’s project-based applications and poster preparation, presentation and discussion sessions
LABS: Supervised practice sessions towards independent TEM operation, preparation for the instrument exam and solving individual specimen preparation problems.

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faculty member and/or academic department standard, as outlined in the course syllabus, illness confirmation may be obtained by one or both of the following methods:

a. Texas A&M University Explanatory Statement for Absence from Class form available at http://attendance.tamu.edu/

b. Confirmation of visit to a health care professional affirming date and time of visit.

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

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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. Course request type: ☐ Undergraduate ☒ Graduate ☐ First Professional (e.g., DVM, JD, MD, etc.)
2. Request submitted by (Department or Program Name): Department of Materials Science and Engineering
   MSEN 613 Advanced Transmission Electron Microscope (TEM) Methodologies in Life and Materials Science (TEM II)
3. Course prefix, number and complete title of course:
4. Catalog course description (not to exceed 50 words): Advanced TEM methodologies, including specimen preparation and TEM imaging/analysis techniques as applicable to both biological and material samples; theory designed to support a strong hands-on component comprising specimen preparation, different imaging/diffraction/spectroscopic techniques and data interpretation.

5. Prerequisite(s): BIOL 602/MSEN 612; graduate classification
   Cross-listed with: BIOL 603
   Stacked with:
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? ☐ Yes ☒ No If yes, from _______ to _______
7. Is this a repeatable course? ☐ Yes ☒ No If yes, this course may be taken _______ times.
   Will this course be repeated within the same semester? ☐ Yes ☒ No
8. Will this course be submitted to the Core Curriculum Council? ☐ Yes ☒ No
9. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
      M.S., Ph.D., Materials Science and Engineering
10. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.
11. ☒ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

12. Prefix Course # Title (excluding punctuation)
    MSEN 613 ADVANCED TEM
    
    Lect. Lab SCH CIP and Final Code Admin. Unit Acad. Year FICE Code
    0 1 0 6 0 3 1 4 1 0 1 0 1 0 0 0 2 1 8 6 4 1 5 - 1 6 0 0 3 6 3 2

    Approval recommended by: [Signature]
    [Name]

    [Signature]
    [Name]

    [Signature]
    [Name]

    [Signature]
    [Name]

    Submitted to Coordinating Board by:
    [Signature]
    [Name]

    Date

    Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 04/14
# SYLLABUS

**BIOL 603/ MSEN 613**  
**Fall 2015**

**Advanced Transmission Electron Microscopy (TEM II)**

**Instructors:**  
Andreas Holzenburg, Ph.D.  
holzen@tamu.edu, 845-1129  
Office hours 1:00 – 5:00 p.m.  
1137B ILSB

Hansoo Kim, Ph.D,  
luminesc@tamu.edu, 845-1129  
1129 ILSB

Rick Littleton  
Rick-littleton@tamu.edu, 845-1129  
1131 ILSB

**Location:** Microscopy and Imaging Center  
**Office hours:** Mon and Wed 1:00 – 5:00 p.m.

**Class meeting times:** TBD  
**Location:** Interdisciplinary Life Science Building (ILSB) 1143


This 3-credit course in TEM has a strong emphasis on advanced data acquisition, analysis and interpretation. **This course normally requires successful completion of Fundamentals of Transmission Electron Microscopy (TEM I; BIOL 602/MSEN 612) or equivalent experience; i.e. demonstrated proficiency in the independent operation of a transmission electron microscope.** This will be waived if specific needs, e.g. specimen preparation, can be demonstrated by the student.

**COURSE DESCRIPTION**

This course is designed to provide students with advanced TEM methodologies including specimen preparation and TEM imaging/analysis techniques as applicable to both biological and material samples. Students will be equipped with the necessary theoretical background in support of a strong hands-on laboratory component comprising specimen preparation, different imaging/diffraction/spectroscopic techniques and data interpretation.

**LEARNING OUTCOMES**

Students will gain sufficient proficiency in sample preparation, image acquisition and interpretation, and transmission electron microscope preparation to independently operate the microscope to a level that contributes to the accomplishment of their research.

**LECTURES AND LABORATORY**
For the first several weeks of this course, there will be two 1-hour theory and application-oriented theory sessions (1:00 – 2:00 p.m.) per week. These sessions will involve theory of the techniques and practical applications with common and advanced protocols as well as algorithms to determine the best protocol or combination of techniques for the problem at hand. In the latter weeks of the semester, the lecture time slot will be devoted to laboratory discussion of and practical application of TEM to students’ research projects.

In addition to the theory and application-oriented theory sessions, there will be two 3-hour laboratory sessions (2:00–5:00 p.m.) per week over the entire 10-week period. These two laboratories each week will involve demonstrations by the MIC staff, hands-on experience by each student to re-enforce the theory sessions, and time for the students to advance their own research projects under lighter supervision. Moreover, students may spend time additional to the scheduled hours doing laboratory work (prep and TEM) as required by their project.

**HOMEWORK:** Each student is required to prepare a final two-page write-up (see below).

**GRADING**
There are two pieces of assessed coursework each accounting for 50% of the grade: an exam paper based on the lecture material probing the theoretical knowledge level attained, and a write-up in the style of a short (2 pages) research paper including an Introduction, Materials & Methods, Results and Discussion. The assessment of which takes into consideration as to whether the student is able to (i) correctly annotate and interpret the images/diffraction patterns, spectra etc. and (ii) critically appraise his/her results in the light of the relevant current literature.

**Grading scale**
A = 90 and more
B = 80 – 89
C = 70 – 79
D = 60 – 69
F < 60

**THE AMERICANS WITH DISABILITIES ACT**
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**ACADEMIC INTEGRITY**
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TAMU CLASSROOM POLICY FOR ABSENCE RELATED TO INJURY OR ILLNESS

For more information, please reference Student Rule 7: http://student-rules.tamu.edu/rule 07. 7.1 The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for absence. Among the reasons absences are considered excused by the university are the following:

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7.1.6.3 An absence for a non acute medical service does not constitute an excused absence. In the case where a student has potentially provided falsified documentation, the instructor should utilize the Aggie Honor System (http://www.tamu.edu/aggiehonor/index.html).

Course Topics Schedule for TEM II (Material Sciences)

Weeks 1-6
Theory and application-oriented theory session 1. Sample preparation. Overview of TEM
sample preparation techniques for diverse materials. 1 h
**Lab 1.** Practice of sample preparation: cutting, grinding, polishing, dimpling and ion milling. 3 h

**Theory and application-oriented theory session 2.** Electron diffraction I. Formation and indexing of selected-area electron diffraction patterns, poly-ring patterns. 1 h
**Lab 2.** Practice of electron diffraction in TEM and indexing using dedicated software. 3h

**Theory and application-oriented theory session 3.** Electron diffraction II. Kikuchi patterns, convergent-beam electron diffraction (CBED). 1 h
**Lab 3.** Practice of Kikuchi line acquisition and analysis and CBED. 3h

**Theory and application-oriented theory session 4.** Imaging I. Imaging contrast, bright-field (BF) and dark-field (DF) imaging; weak-beam dark-field (WBDF) imaging; two-beam condition and crystal defect identification. 1 h
**Lab 4.** BF, DF, two-beam WBDF imaging, identification of dislocation Burgers vectors. 3h

**Theory and application-oriented theory session 5.** Embedding and staining for materials. Epoxy and acrylic resin components and formulations: staining theory and practice. 1 h
**Lab 5.** Making glass knives; cutting semi-thin sections; practice in embedding and staining. 3h

**Theory and application-oriented theory session 6.** Principles of ultramicrotomy and glass knife preparation. 1 h
**Lab 6.** Cutting ultra-thin materials sections. 3h.

**Theory and application-oriented theory session 7.** Imaging II. Principles of high-resolution electron microscopy (HREM); HREM data processing and interpretation. 1 h
**Lab 7.** High-resolution lattice imaging and image simulation. 3h

**Theory and application-oriented theory session 8.** Compositional analysis and related techniques. Energy dispersive spectroscopy (EDS), electron energy-loss spectroscopy (EELS), electron spectroscopic imaging (ESI), semi-STEM and STEM. 1 h
**Lab 8.** EDS data collection and elemental identification. 3h

**Theory 9-11.** Theory expansion slots and Review prior to exam
**Lab 9-11.** Continuation of Lab 8. 3h

**Theory 12. Written exam**

<table>
<thead>
<tr>
<th>Weeks 7-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Continuation of lab sessions 2 x 3 h per week fostering students’ own project work.</strong></td>
</tr>
<tr>
<td>TBA</td>
</tr>
</tbody>
</table>
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:  □ Undergraduate  □ Graduate  □ First Professional (e.g., DVM, JD, MD, etc.)

2. Request submitted by (Department or Program Name):  Materials Science and Engineering

3. Course prefix, number and complete title of course:  MSEN 614 Fundamentals of Scanning Electron Microscopy (SEM) and Environmental Scanning Electron Microscopy (ESEM)

4. Catalog course description (not to exceed 50 words): Provides biologists, material scientists, and students from other disciplines with the techniques of operation of the scanning electron microscope (SEM) and the environmental SEM (ESEM) coupled with the appropriate theoretical background knowledge; individual instruction in support of their research endeavors involving SEM/ESEM.

5. Prerequisite(s):  Graduate classification

Cross-listed with:  BIOL 604  Stacked with:  
Cross-listed courses require the signature of both department heads.

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

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

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

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

M.S., Ph.D., Materials Science and Engineering

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

   Attach approval letters.

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

12. Prefix  Course #  Title (excluding punctuation)  
    MSEN  614  FUNDAMENTAL SEM/ESEM

    Lect  Lab  SCI  CIP and Final Code  Admin. Unit  Acad. Year  HCE Code
    0  1  0  3  0  2  4  1  0  1  0  1  0  0  9  2  1  8  6  4  1  5  -  1  6  0  0  3  6  3  2

    Approval recommended by:  Level 6

Thomas D. McKnight (BENG)  Date
Department Head or Program Chair (Type Name & Sign)

John Criscione  Date
Chair, College Review Committee

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

Dean of College  Date

Submitted to Coordinating Board by:

Karen Butler-Purry  Date
Chair, GC or UCC  Effective Date

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 04/14
Syllabus

Fundamentals of Scanning Electron Microscopy (SEM) and Environmental Scanning Electron Microscopy (ESEM)

BIOL 604 • MSEN 614
Fall 2015

Credits: 2
Enrollment Limit: normally 12 (configuration-dependent)
Prerequisites: Graduate classification

Instructor: Dr. Andreas Holzenburg
holzen@tamu.edu
979-845-1164

Office hours
Tuesday and Thursday 1:00 – 3:00 p.m.
1137B Interdisciplinary Life Science Building

Meeting times: TBD
Location: 1143 Interdisciplinary Life Science Building (ILSB)

Course Description
This course will provide students independent of their background and discipline of study with the theoretical background and techniques of operation of a scanning electron microscope (SEM) and the principle of an environmental scanning electron microscope (ESEM). In addition, students will receive individual instruction, which will facilitate the completion of their later research involving SEM and/or ESEM.

Course Format
The lecture portion of the course will amount to one hour per week when integrated over the entire semester while the laboratory portion of the course will be three hours per week. The class meets for lectures every Tue and Thu at 1 pm up to the written exam, which will cover the topics presented in the lectures. Laboratory sessions will allow the students to receive training on the operation of one of the SEMs in the MIC, depending on the student’s project requirements. Following the training and practice sessions, each student will be required to pass an instrument exam which grants the student independent operation of that instrument. Two hours free instrument time per week are granted to each registered student who has successfully completed the instrument exam. The course will conclude with a poster presentation relating to the student’s research project.

Learning outcomes
Conceptual understanding of the basic underlying principles that enable the formation of images and elemental analysis spectra in a scanning electron microscope (SEM) and environmental SEM. Development of an appreciation for the interdependency and weighting of parameters. Application of this knowledge base to the hands-on operation of a scanning electron microscope with the view to become an intelligent user who is able to establish the most appropriate imaging/elemental analysis conditions for the specimen at hand. Being able to judge specimen compatibility and perform procedures that will lead to SEM-compatible specimens.
**Homework**

Each student is required to prepare a poster describing a basic structural analysis of a specimen examined in the SEM during the course. The poster should comprise three sections: 1) Introduction, 2) Materials & Methods and 3) Results & Discussion (including presentations of micrographs with SEM-specific annotations, figure legends, and image interpretation).

**Grading**

There are three pieces of assessed coursework: the poster (accounting for 25% of the grade), a written exam (accounting for 45%), and a successful instrument exam, accounting for 30% of the final grade. Being eligible for the practical examination is contingent upon passing the written exam (minimum score 60%). Only one re-take within one week is allowed and the maximum score for a re-take exam is 60%. In order to pass the instrument exam, a student must have been found to be properly qualified to independently operate one of the SEMs. This will be confirmed by a certificate handed out to the student.

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<table>
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<tbody>
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<td>60 – 69</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60</td>
</tr>
</tbody>
</table>

**Recommended Books**


(a very concise, yet comprehensive introductory textbook also covering TEM)

(advanced and specialized text providing in-depth coverage of EDS and related techniques)

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### Lecture Topics

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>First meeting</td>
<td>Organization of the course and scheduling of the labs</td>
</tr>
<tr>
<td>Lecture 1:</td>
<td>Safety lecture, tour of the Center</td>
</tr>
<tr>
<td>Lecture 2:</td>
<td>Introduction to SEM and ESEM</td>
</tr>
<tr>
<td>Lecture 3</td>
<td>Vacuum systems in the SEM</td>
</tr>
<tr>
<td>Lecture 6</td>
<td>Digital imaging versus the analog approach, Proprietary software, File formats. Image manipulation and scientific ethics.</td>
</tr>
<tr>
<td>Lecture 7</td>
<td>Special applications. Energy-dispersive analysis (EDS), Wavelength-dispersive spectroscopy (WDS), Cathodoluminescence (CL).</td>
</tr>
<tr>
<td>Lecture 8</td>
<td>Theory review</td>
</tr>
<tr>
<td>Lecture-slot 9</td>
<td>Written exam</td>
</tr>
<tr>
<td>Lecture 10</td>
<td>Troubleshooting: Questions and answers (1 h) - no beam, beam instabilities, vacuum problems, low contrast</td>
</tr>
<tr>
<td>Lectures 11 to end</td>
<td>Application-oriented theory sessions: specialized and students’ project-based applications, poster preparation, project presentation and discussion sessions (1 hour per week or as required).</td>
</tr>
</tbody>
</table>

### Labs

Supervised practice sessions towards independent SEM operation, preparation for the instrument exam and solving individual specimen preparation problems (3 hours per week). Laboratory

<table>
<thead>
<tr>
<th>Lab.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab. 1</td>
<td>Schedule Introduction to the SEM. Safe use of the microscope.</td>
</tr>
<tr>
<td>Labs. 2 and 3</td>
<td>Sample preparation techniques</td>
</tr>
<tr>
<td>Lab. 4</td>
<td>SEM basic operation. Instructor in SEM room with students</td>
</tr>
<tr>
<td>Lab. 5</td>
<td>SEM basic operation. Instructor in SEM room with students.</td>
</tr>
<tr>
<td>Lab. 6</td>
<td>Instructor close to the SEM but students operating scope independently</td>
</tr>
</tbody>
</table>
| Lab. 7   | SEM operation and image collection.  
|         | Instructor close to the SEM but students operating scope 
|         | independently |
| Lab. 8  | SEM practice **and check-out**.  
|         | Following check-out, independent work on projects.  
|         | EDS training for students if interested.  
|         | Limits will be imposed on hours per week for class project beam time |
| Labs 9 to end | Independent work on projects. Limits will be imposed on hours per week for class project beam time. |
Texas A&M University

Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:  ☐ Undergraduate  ☑ Graduate  ☐ First Professional (e.g., DVM, JD, MD, etc.)
2. Request submitted by (Department or Program Name): Department of Materials Science and Engineering
3. Course prefix, number and complete title of course: MESEN 618 Composite Materials Processing and Performance
4. Catalog course description (not to exceed 50 words): Fundamental science and design; processing and design interaction regarding multiphase composites; processing science, experimental characterization, laminate analysis; design structure and processing.

5. Prerequisite(s): Elasticity, continuum mechanics, or equivalent; graduate classification
Cross-listed with: MEEN 686
Stacked with: MEEN 471
Cross-listed courses require the signature of both department heads.

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

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

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

9. 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. Eng., M.S., Ph.D., Materials Science and Engineering

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

12. Prefix: MESEN
    Course #: 618
    Title (excluding punctuation): COMPOSITES PROCESSING

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>HICE Code</th>
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<td>5</td>
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</table>

Approval recommended by:
Miladin Radovic (MESEN)  7/14/14
Department Head or Program Chair
John Criscione
Chair, College Review Committee  8/14/14
Dean of College
Karen Butler-Purry
Chair, GC or UCC

Submitted to Coordinating Board by:
7/14/14

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services
MSEN 626/MEEN 471/MEEN 686
Fall 2015

MEEN 471 Elements of Composite Materials
MSEN 618/MEEN 686 Composite Materials Processing and Performance

Class meeting times: TBD
Location: TBD

INSTRUCTOR INFORMATION
Instructor: Prof. Terry Creasy
Tel: 979-458-0118
(The system digitizes voice mail and sends it to my email)
E-mail: tcreasy@tamu.edu
Office: 526 MEOB
Office Hours: Monday, Tuesday, and Thursday 1:00 p.m. to 2:00 p.m. or by appointment

DESCRIPTION
Fundamental science and design; processing and design interaction regarding multiphase composites; processing science, experimental characterization, laminate analysis; design structure and process. (3 credits)

PREREQUISITES: Elasticity, continuum mechanics, or equivalent; graduate classification

COURSE LEARNING OUTCOMES
When this course ends students should have these abilities:
1. use fundamental equations, self-authored software, or commercial software to obtain orthotropic material properties for a specific composite laminate;
2. use fundamental equations or finite element software to find the loads applied to a component, the laminate that supports those loads with allowable displacements, and to state whether the composite is a better choice than other materials;
3. understand composite material’s benefits and limitations;
4. calculate lamina properties from fiber and matrix properties;
5. select processing methods based on the product form and material properties.

TEXTBOOK AND OTHER REQUIRED MATERIAL
### COURSE CALENDAR

The course calendar might change to better accommodate the learning objectives or to adjust for inclement weather, power failures, or other issues. Dr. Creasy will post a new calendar to elearning and announce the changes in lecture.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture</th>
<th>Content</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1</td>
<td>20-Aug</td>
<td>1</td>
<td>Syllabus, Project, Concepts</td>
<td>Ch 1, pp. 1-21</td>
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<tr>
<td></td>
<td>1-Sep</td>
<td>2</td>
<td>Fiber Reinforcement</td>
<td>Ch 2, pp. 27-41</td>
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<tr>
<td>2</td>
<td>6-Sept</td>
<td>3</td>
<td>Solidworks, FEA</td>
<td>None or handout</td>
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<tr>
<td></td>
<td>8-Sept</td>
<td>4</td>
<td>Matrix Materials (Undergraduate teams and individual graduate students submit Project Request)</td>
<td>Ch 2. pp. 41-57</td>
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<tr>
<td>3</td>
<td>13-Sep</td>
<td>5</td>
<td>Properties (Projects Approved/Revised)</td>
<td>Ch 2. pp. 57-70</td>
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<tr>
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<td>15-Sep</td>
<td>6</td>
<td>Manufacturing Processes</td>
<td>Ch 3. pp. 71-90</td>
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<tr>
<td>4</td>
<td>20-Sep</td>
<td>7</td>
<td>Micromechanics--the basic, stiffness</td>
<td>Ch 4. pp. 91-105</td>
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<tr>
<td></td>
<td>22-Sep</td>
<td>8</td>
<td>Stiffness, Moisture and Thermal Expansion</td>
<td>Ch 4. pp. 105-116</td>
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<td>5</td>
<td>27-Sep</td>
<td>9</td>
<td>Strength I</td>
<td>Ch 4. pp. 116-129</td>
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<td>29-Sep</td>
<td>10</td>
<td>Strength II</td>
<td>Ch 4. pp. 129-142</td>
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<td>4-Oct</td>
<td>11</td>
<td>Solidworks FEA</td>
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<td>6-Oct</td>
<td>12</td>
<td>Exam 1 (undergraduate and graduate students)</td>
<td>Covers Ch 1-4</td>
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<td>7</td>
<td>11-Oct</td>
<td>13</td>
<td>Exam Return and Lecture</td>
<td>None or handout</td>
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<td>13-Oct</td>
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<td>Midterm Project Reviews (5 min) Graduate students only.</td>
<td>None or handout</td>
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<td>8</td>
<td>18-Oct</td>
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<td>Ply Mechanics I</td>
<td>Ch 5. pp. 143-159</td>
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<td>20-Oct</td>
<td>16</td>
<td>Ply Mechanics II</td>
<td>Ch 5. pp. 159-166</td>
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<td>10</td>
<td>1-Nov</td>
<td>19</td>
<td>Design with Carpet Plots</td>
<td>Ch 6. pp. 201-216</td>
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<td>3-Nov</td>
<td>20</td>
<td>Carpet Plots, Hygrothermal Stresses</td>
<td>Ch 7. pp. 217-233</td>
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<tr>
<td>11</td>
<td>8-Nov</td>
<td>21</td>
<td>Strength and Failure Criteria</td>
<td>Ch 7. pp. 233-252</td>
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<tr>
<td></td>
<td>10-Nov</td>
<td>22</td>
<td>Strength Design with Carpet Plots</td>
<td>Ch 7. pp. 252-266</td>
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<td>12</td>
<td>15-Nov</td>
<td>23</td>
<td>Demo or Problem Session</td>
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<td>17-Nov</td>
<td>24</td>
<td>Exam 2 (undergraduate and graduate students)</td>
<td>Covers Ch 1-7</td>
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<td>22-Nov</td>
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<td>Exam Return and Project Presentations</td>
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<td>24-Nov</td>
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<td>Thanksgiving Day</td>
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<td>14</td>
<td>29-Nov</td>
<td>26</td>
<td>Project Presentations</td>
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<tr>
<td></td>
<td>1-Dec</td>
<td>27</td>
<td>Project Presentations</td>
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<td></td>
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<td><strong>Comprehensive final exam, graduate students only.</strong></td>
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Prepared by Terry S. Creasy
<table>
<thead>
<tr>
<th>Component value (%)</th>
<th>Letter grade</th>
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<tbody>
<tr>
<td>Attendance and participation</td>
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<td>Design guide/Notebook</td>
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<tr>
<td>Homework</td>
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<td>Final project</td>
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<tr>
<td>Exams</td>
<td>40</td>
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</tbody>
</table>

This is a stacked course (undergraduate and graduate sections meeting concomitantly).
Undergraduate students will have two midterm exams and a final project with groups of three or four students designing a product made from composite materials. Graduate students will have two midterm exams, a final exam, and an individual design project with a midsemester design review and a final presentation.

**ABSENCE POLICY**

Dr. Creasy accepts illness self-declaration for illnesses lasting three days or less with this exception: if you miss an exam because you are ill, you must see a doctor and get a medical excuse. Reference Student Rule 7. (http://student-rules.tamu.edu/rule07) for more information and make-up policy.

**TOPICS COVERED:**

- Materials science for composite materials
- Micromechanics, solid mechanics, and lamination theory for composites
- Processing methods for composite structures
- Finite element analysis for orthotropic structures
- Failure and damage in composites including test methods

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

**ACADEMIC INTEGRITY:**
For additional information please visit http://aggiehonor.tamu.edu “An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type: □ Undergraduate □ Graduate □ First Professional (e.g., DVM, JD, MD, etc.)
2. Request submitted by (Department or Program Name): Department of Materials Science and Engineering
3. Course prefix, number and complete title of course: MSEN 626 Polymer Laboratories
4. Catalog course description (not to exceed 50 words): Introduction to basic experimental skills relating to polymers; experiments include polymerization, molecular weight determination, FTIR, tensile test, NMR, DSC, swelling index, viscosity, x-ray diffraction.

5. Prerequisite(s): Graduate classification
Cross-listed with: MEEN 606 Stacked with:
Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? □ Yes □ No If yes, from _______ to _______
7. Is this a repeatable course? □ Yes □ No If yes, this course may be taken _______ times.
Will this course be repeated within the same semester? □ Yes □ No
8. Will this course be submitted to the Core Curriculum Council? □ Yes □ No
9. 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.Eng., M.S., Ph.D., Materials Science and Engineering

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

<table>
<thead>
<tr>
<th>MSEN 626 POLYMER LABORATORIES</th>
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<tr>
<td>Lect. Lab SCH CIP and Fund Code</td>
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<tr>
<td>-------------------------------</td>
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<td>0 2 0 3 0 3 1 4 3 2 0 1 0 0 0 6</td>
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Approval recommended by:
Alan Palazzolo (MEEN) 7/14/14
Department Head or Program Chair (Type Name & Sign) Date
Miladin Radovic (MEEN) 7/14/14
Department Head or Program Chair (Type Name & Sign) Date
John Criscione Chair, College Review Committee 3/14/14
Dean of College 8/14/14
Karen Butler-Purry Chair, GC or UCC 3/14/14
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 – 04/14
### SYLLABUS

#### MSEN 626/MEEN 606

**Polymer Laboratories**

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>H-J Sue</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA:</td>
<td>Three postdocs/graduate students will serve as TA</td>
</tr>
<tr>
<td>Office:</td>
<td>ENPH 216</td>
</tr>
<tr>
<td>Office hours:</td>
<td>By appointment</td>
</tr>
<tr>
<td>E-mail address:</td>
<td><a href="mailto:hjsue@tamu.edu">hjsue@tamu.edu</a></td>
</tr>
<tr>
<td>Phone:</td>
<td>(979) 845-5024</td>
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**Class hours:** Monday 5:15 p.m. (or mutual agreements with the TAs) @ specified labs

**Textbook:**
- Handouts will be given a week before the lab sessions

**References:**
- *Polymer: Polymer Characterization and Analysis*: Jacqueline L. Kroschwitz (editor)
- *Instrumental Methods of Analysis*, Hobart H. Willard, Lynne L. Merritt, Jr. and John A. Dean
- *Physical Properties of Polymers Handbook*, James E. Mark

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**Course Objective**

To prepare students who are interested in polymer research with necessary experimental skills to conduct & analyze experimental work.

**Course Outline**

This course covers basic experimental methods in polymer science. Broad spectra of experiments are planned, dealing with synthesis, characterization and structure/property relationship. Details and procedures for some of the experiments are given in Collins, Bares and Billmeyer (CBB). Others are described in handouts.

**Grade**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>Lab Performance:</td>
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<td>Report:</td>
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<td>Presentation:</td>
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<td>Final Exam.:</td>
<td>25%</td>
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**Grading System:**

- Score of 80 and above: A
- Score of 65 – 79: B
- Score of 50 – 64: C
- Score of 49 and below: F
Learning outcomes
The students are expected to learn a total of 12 experimental skillsets with ability to carry out the experiments and analyze the results. The students are also expected to be able to write appropriate laboratory reports for each experiment. It is anticipated that the students will work in a team of four to gain team learning experiences. The overall learning from the class is expected to facilitate and accelerate the students Ph.D. dissertation research related to polymer materials science.

Laboratory Experiments: (some changes may be made due to the equipment availability)
1. Polymerization of Styrene
2. Curing of epoxy (samples to be used for DMA & tensile tests)
3. Rubber swelling
4. Thermal Gravitational Analyzer
5. Density Measurements
6. Surface Roughness Measurements
7. Dynamic Mechanical Analysis
8. Fracture Toughness
9. Fourier Transform Infrared Spectroscopy
10. Scratch Test
11. Tensile Test
12. DSC

Lab. Report:
Each report should contain the following sections:

1. Introduction: This should be a brief (1-3 paragraphs) statement of the objectives of the experiment. The experimental method should be described, along with any pertinent theoretical background.

2. Experimental: This should contain a reference to the detailed procedure used; for example, CBB, pages 347-352, procedure II. This section should also include a complete sample calculation for one typical set of data.

3. (3) Results/Analysis: This should include a presentation of the experimental data, tabulated together with all calculated quantities. Where possible, appropriate graphs should be included.

4. Discussion/Conclusion: This section should include conclusions, unusual observations, and other remarks about the experiment. Alternate methods of synthesis, characterization or structure/property measurement should be discussed, along with the particular advantages and disadvantages of each.

5. Relevant Issues: These are questions that you must answer at the end of your report.

YOU MUST READ THE HAND-OUT OR THE EXPERIMENTAL DETAILS, AND THE THEORETICAL BACKGROUND FOR THE EXPERIMENT BEFORE YOU COME TO CLASS IN ORDER TO GAIN THE MOST BENEFIT FROM THE EXPERIMENT.
Students will work in groups of four. There will be three groups. Each student will write an individual report. It is expected that students will consult with each other, but the actual writing should be independent. The reports must be complete, but concise. Lengthy descriptions and discussions are unnecessary. Therefore, please keep the lab report to a total of five pages or less (excluding the title page). Reports are to be typewritten. Poor organization and/or sloppy presentation will result in a lower grade on the report. The lab report is due the week after the experiment is finished. For example, if you perform the styrene polymerization experiment on 9/6 the lab report is due on 9/13.

SCHEDULE OF CLASS (LECTURE AND EXPERIMENTS)

1st Day of Class will be announced and will focus on background and lab practices

(Subsequent class time will be finalized on that day)

2nd – 13th week: Laboratory Practice
14th week: Oral Presentation of Experiments

1. Polymerization of Polystyrene, PS (emulsion polymerization of Styrene)

Read pages 337-341 in CBB

Relevant Issues:

1. How to determine the MW and MWD of the PS you have synthesized?
2. If air conditioning fails, will it affect your experiment? Why?

2. Curing of Epoxy

Reagent list:

- Dow Epoxy Resin (DER 332): diglycidyl ether of bisphenol-A
- 4,4'-Diaminodiphenyl sulfone (DDS).

A. Preparation of the plates (mold)

i. Clean the plates with acetone and a razor blade. (This procedure will be shown to you.)
ii. Coat the plates with the mold release agent.
iii. Place the plates and the rubber molder into the oven and heat the oven to 150°C. Leave the plates in the oven for 30 minutes.
iv. Take the plates out of the oven (when the oven temperature reaches 100°C). Put in the rubber molder and the spacers and clamp the plates together. (You will be shown how to do this.) Put the plates (or mold) back in the oven.

B. Preparation of epoxy

i. Weigh out 60 grams of epoxy resin (DER 332) and the appropriate amount of DDS.
ii. Heat the DER 332 to 130°C in the oven or on a hot plate. Take the DER 332 out of the oven and then mix the DDS into the DER 332 until you have a clear mixture.
iii. Degas this mixture almost no gas bubbles are observed. DO NOT ALLOW THE SAMPLE TO GEL.
iv. Pour the solution in between the glass plates. (You can either do this when the plates are in the oven or you can take the plates out of the oven and pour the epoxy mixture in between the plates and then put them back into the oven.
v. Heat the sample to 180° C for 2 hours and then increase the temperature to 217° C for two hours.

Relevant Issues:
1. What will happen to the epoxy plaque mechanical properties if you accidentally put 5% more of curing agent in epoxy for curing?
2. Why the sample is heated to 180° C and then to 220° C for curing?

3. Rubber Swelling
Material needed: Two 2 gram pieces of vulcanized rubber (one with carbon black filler and one without).

The experimental procedure is in CBB.

Relevant Issues:
1. If the rubber sample you use for the experiment contains a few small holes, will it affect the outcome of the results?
2. Which method, rubber swelling or DMA, is better for estimating $M_c$? Why?

4. TGA.
Material being tested: Filled Polymers.
A small amount of samples will be given to you to carry out TGA experiments.

Relevant Issues:
1. What is an appropriate amount of samples to be used for the TGA experiment? Why?
2. Is it possible the weight of the sample will increase as temperature of testing is increased? Why?

5. Density Measurements
Material being tested: The Epoxy panel or the PS that was made at the beginning of the semester.

The density measurements will be obtained using a microbalance. You will need to cut off small samples (e.g. a 1/4" X 1/4" X 1/4" piece). The cutting procedure will be shown to you. The SOP will be explained to you and a hard copy is available as you perform the experiment.

Relevant Issues:
2. By what other means can you obtain density? Which method(s) will give you the best accuracy?
2. Is it possible to use the experiment to obtain density of a two-component polymer blend?

7. Dynamic Mechanical Testing  
*Material needed: PP Sample*

The standard operating procedure (SOP) will be explained to you, and there is a hard copy available as you perform the experiment.

**Relevant Issues:**
1. Why there is usually a low temperature ten delta peak?
2. What does the breadth of the T_g peak represent?
3. What assumptions have to be made if the M_c (the molecular weight between crosslinks) of epoxies is to be measured using DMA?

7. Surface Roughness Measurements  
*Material being tested: PP sample*

**Relevant Issues:**
1. What are the typical parameters used to describe surface roughness?
2. Can the surface roughness value be changed if you change the magnification of the objective lens? Why?
3. What are the instruments commonly used to measure surface roughness? Describe their resolution and usefulness and limitation.

8. Fracture Toughness Measurement (LEFM)  
*Material being tested: Epoxy sample*

**Relevant Issues:**
1. What is plane strain condition? What is plane stress condition? Which is a material parameter? Why?
2. If the polymer is very ductile and you still want to apply the LEFM approach, what can you do?
3. Can you use LEFM on thin film polymers? Why?

9. Fourier Transform Infrared Spectroscopy (FTIR)  
*Material being tested: PS or epoxy*

**Relevant Issues:**
1. Can FTIR detect functional group on nanoscale particles which are dispersed in a bulk sample?
2. What type(s) of chemical structures cannot be detected using FTIR?
3. If your sample contains water, is it possible to quantify their amount using FTIR? How?

10. Scratch Tests
Material being tested: Polypropylene

Relevant Issues:
1. What are the limitations of a spherical tip for scratch testing?
2. Can the scratch visibility resistance be objectively evaluated if the specimens possess different colors?
3. Will ductile material or brittle material show better resistance to scratch visibility? Why?
4. Can the scratch tests be applied to study coating adhesion? How?

11. Tensile Test

Material being tested: PP samples

Relevant Issues:
1. How do you make sure that the Young's modulus measured is correct? How is Secant Modulus determined?
2. How to obtain a true stress and true strain curve?
3. What is the difference between toughness and ductility?

12. Thermal analysis (DSC)

Material being tested: PP

Thermal analysis will be performed using Differential Scanning Calorimetry (DSC). DSC will be performed on your PP sample.

Relevant Issues:
1. Why the T_g determined by DMA is different from that by DSC? Which is more accurate?
2. How does the scanning rate affect the data?
3. How do you estimate lamellar thickness using a DSC?
4. How do you estimate the percent crystallinity using DSC?

- Attendance and Make-up Policies
Attendance and make-up of exams will be in accordance with Student Rule 7 (http://student-rules.tamu.edu/rule07).

Make-up Policy:
If an absence is excused, the instructor will either provide the student an opportunity to make up any quiz, exam or other work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. If the instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence.

The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details (http://studentrules.tamu.edu/rule07). The fact that these are university-excused absences does
not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

1) Participation in an activity that is required for a class and appears on the university authorized activity list at https://studentactivities.tamu.edu/app/sponsauth/index
2) Death or major illness in a student's immediate family.
3) Illness of a dependent family member.
4) Participation in legal proceedings or administrative procedures that require a student's presence.
5) Religious holy day. NOTE: Prior notification is NOT required.
6) Injury or illness that is too severe or contagious for the student to attend class.
   a) Injury or illness of three or more class days:
      Student will provide a medical confirmation note from his or her medical provider within one week of the last date of
      the absence (see Student Rules 7.1.6.1)
   b) Injury or illness of less than three class days:
      Student will provide one or both of these (at instructor's discretion), within one week of the last date of the absence:
      (i.) Texas A&M University Explanatory Statement for Absence from Class form available at http://attendance.tamu.edu
      or (ii.) Confirmation of visit to a health care professional affirming date and time of visit.
7) Required participation in military duties.
8) Mandatory admission interviews for professional or graduate school that cannot be rescheduled.
Other absences may be excused at the discretion of the instructor with prior notification and proper documentation. In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.

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

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

Form Instructions
1. Course request type: □ Undergraduate  ✔ Graduate  □ First Professional (ex., DVM, JD, MD, etc.)
2. Request submitted by (Department or Program Name): Department of Sociology
3. Course prefix, number and complete title of course: SOCI 640 SOCIOLOGY OF DEVELOPMENT
4. Catalog course description (not to exceed 50 words):
   Survey of sociology of development; review of major classical and contemporary approaches to development including but not limited to modernization theory, world systems theory, comparative nationalism, demographic theories, feminist approaches; Contradictions of development including K-Cycles, social movements and ecological constraints.

5. Prerequisite(s):  Graduate Status or permission of instructor
   Cross-listed with:  Stacked with:  
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? □ Yes  ✔ No  If yes, from _______ to _______
7. Is this a repeatable course?  □ Yes  □ No  If yes, this course may be taken _______ times.
   Will this course be repeated within the same semester?  □ Yes  ✔ No
8. Will this course be submitted to the Core Curriculum Council?  □ Yes  ✔ No
9. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
   M.S., Ph.D in sociology

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

12. Prefix  Course #  Title (excluding punctuation)
   SOCI  640  Sociology of Development
   Lect.  Lab  SCH  CIP and Funct Code  Admin. Unit  Acad. Year  FICE Code
   0  3  0  0  0  3  4  5  1  1  0  1  0  0  1  2  5  9  0  1  5  1  6  0  0  3  6  3  2
   Approval recommended by:
   Jane Seth
   Department Head or Program Chair (Type Name & Sign)  Date
   Patricia A. Hurley
   Chair, College Review Committee  Date
   Pamela R. Matthews
   Dean of College  Date
   Department Head or Program Chair (Type Name & Sign)  Date
   Patricia A. Hurley  9/13/14
   (if cross-listed course)
   Submitted to Coordinating Board by:
   Chair, GC or UCC  Date
   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 04/14

CIAA 14498
SOCIOLGY 640

SOCIOLGY OF DEVELOPMENT

PROFESSOR SAMUEL COHN

T 9-12
Academic 307

Office: 417 Academic
Office Phone: 845-0814
Home Phone: (512) 454-8802

OFFICE HOURS

T 12-3

COURSE OVERVIEW

This is an introduction to the sociology of economic development. Development sociology is a highly diverse field with practitioners using every theoretical perspective from world systems theory to neo-Marxism to functionalism to demographic theory to organizational institutionalism to feminist theory to critical race theory to neoclassical economics. It operates at the macro and the micro level. This course provides a broad introduction to many of these perspectives - with some emphasis on economic sociological theory and the tension between state and market.

GRADING AND EVALUATION

The grades for the course will be based 50% on a set of ten 100-250 word themed papers (each graded on a scale from 0 to 10) and 50% on a take home final essay exam which is worth 100 points (graded on a scale from 0 to 100).

The papers will be assigned one a week and will be on fixed topics to be announced at the end of each class. Because there are more than ten weeks in the semester - more than ten topics will be given. Students may either ignore the extra assignments or submit more than ten papers and have the best ten count for the grade.
The final exam will be a 24 hour take home exam. There will be four questions - answer four of four. The exam is open book, open internet and solo. No verbal or written consultation, email help or other uses of living human beings other than the professor are allowed. The exact time of the exam will be set to maximize the convenience of the students in the class.

A = 180 points or more  
B = 160 to 179 points  
C= 140 to 159 points  
D = 120 to 139 points  
F= Lower than 120 points

ATTENDANCE AND MAKE-UP POLICY

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

Generally papers are due at the beginning of class the week after they are assigned - and the final exam is given on a date jointly agreed upon by the students. Turning papers after the required date is acceptable only with a university excused absence.

Note you do not have to write a paper every week. More papers are assigned than are necessary to make a student's quota of ten. So students are best off skipping assignments on weeks where they have lots of other demands on their time - and then concentrate on turning in good papers in a timely manner on the weeks they are "on duty".
Where to Find the Readings:

Most of the readings can be found in the TAMU closed reserves. Articles and book selections will be on electronic reserve. Whole books will be kept on physical reserve.

All the books will be available on closed reserve. However, you may want to buy the books from which we read large amounts - to facilitate reading at times and locations that are more suitable to your personal schedule.

In particular, we will be making nearly constant use of the Szirmai - so if you buy only one book that is an excellent choice. Buying the book by Cohn gets me royalties (ka-ching!) but is otherwise no more or less desirable than buying the other non-Szirmai books on the list. Buy as many or as few books as your taste and budget allows.

Suggested Books for Purchase:


AGGIE HONOR STATEMENT

"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: http://aggiehonor.tamu.edu

ADA 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.

COURSE OUTLINE AND READING ASSIGNMENTS


Chapter 3. Pp. 68-72, 78-90,
Chapter 4. Pp. 117-128
Chapter 9. Pp. 303-353
Week 2. Functionalism and Modernization Theory // Classical Dependency Theory


   Chapters 1-2. Pp. 21-148
   Chapter 4. Pp.191-224

Week 3. World Systems Theory // Historicism and Models of Stable World System Structures


   Chapter 1. Pp. 1-34


   (Note the reading starts halfway through Chapter 1)


   Chapter 2. Pp. 19-45
   Chapter 4. Pp. 76-106
Week 5. The Developmentalist State


Week 6. The Classic O’Connorian Model of Development Within the Core


Week 7. Applications of O’Connorian Models to Underdeveloped Economies


Chapters 1-7. Pp. 1-125
Chapters 11-12. Pp. 165-190

Week 8. Social Democratic Models of Development


Selections TBA.


Week 9. The Resource Curse Debate // Kondratieff Cycles


Chapter 11. Pp. 269-83 ONLY.
Week 10. Education and Development // Demographic Models of Development

Szirmai, Chapter 5. 141-176
Szirmai, Chapter 7. Pp. 213-254


Week 11. Gender and Development


Fernandez-Kelly, Maria Patricia. 1983. For We Are Sold, I and My People: Women and Industry in Mexico’s Frontier. Albany, SUNY.

   Chapter 4. Pp. 70-90.

Week 12. Post-Development Critique // Environment and Development


   Chapter 1. Pp. 15-44


Week 13. The Moore Commodity Centered Model of Limits to Growth//Criminological Models of Development


Week 14. Development and Social Conflict


Chapter 1. Pp 1-4, 9-40


Chapter 2. Pp. 35-76.
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

2. Course prefix, number and complete title of course: SPED 603: Foundations of Special Education

3. Catalog course description (not to exceed 50 words): Build a knowledge base to understand the historical and conceptual foundations of special education; familiarization with special education literature; provide an overview of current issues and trends impacting special education.

4. Prerequisite(s): Graduate Classification; Approval of Instructor; Approval of Department Head

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 programs(s) (e.g., B.A. in history)
   Ph.D students in Educational Psychology - Special Education emphasis

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

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)
    S     E     D     6     0     3     F O U N D A T I O N S     O F     S P E D

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<th>CIP and Fund Code</th>
<th>Admin Unit</th>
<th>Acad. Year</th>
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Approval recommended by:

Victor Williams, Ph.D. [Signature] 08/14/14
Department Head or Program Chair (Type Name & Sign) Date

George Cunningham, Ph.D. [Signature] 08/14/14
Chair, College Review Committee Date

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

George Cunningham, Ph.D. [Signature] 08/14/14
Dean of College Date

Mark Zoran, Ph.D. [Signature] 08/14/14
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
SPED 603

FOUNDATIONS OF SPECIAL EDUCATION:
SPRING 2014

Class meetings:     Thursday: 12:00-3:00
                   Room: TBA

Instructor:         Mack D. Burke, Ph.D.  
                   Associate Professor of Special Education  
                   Department of Educational Psychology  
                   mburke@tamu.edu  
                   648 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.

Required Text:


Readings: Articles and Websites that will be used during the course will be posed in e-learning.

Prerequisites: Graduate classification; Approval of Instructor; Approval of Department Head.

Description: The primary purposes of this course are to: (a) build a knowledge base for understanding the historical and conceptual foundations of special education, (b) to familiarize students with foundational special education literature, and (c) provide an overview of the current issues and trends impacting the field of special education. The course will focus on "where we have been," "where we are," and "where we are going." Content will be covered to address breadth across disability domains as well as depth in several domain specific areas related to foundational principles of special education.

Attendance Policy: Students are required to attend class all class sessions on time. For university excused absences, you should submit class work as assigned by the instructor by 30 days from the absence or make alternate arrangements with the instructor. See http://student-rules.tamu.edu/rule07 for university policy.

Course Objectives:
1. Students will demonstrate mastery of foundational principles of special education related to history, pedagogy, and research.
2. Students will analyze and evaluate key foundational articles in special education.
3. Students will be able to identify the important figures that made a substantial impact on the field of special education.
4. Students will demonstrate mastery of contemporary issues and trends in special education.

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<th>Course Requirements</th>
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<td><strong>Class Preparation and Participation:</strong> 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 guest speakers may assign additional articles to be read prior to those presentations.</td>
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<td><strong>Assigned Class Chapters:</strong> Thoroughly read weekly assigned chapters and be prepared to lead the discussion with the class of your assigned reading. Students will be assigned should (a) be well-prepared to assume their respective role in facilitating discussion for assigned readings and (b) submit the corresponding written content required by ahead of time.</td>
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<td><strong>Issues Paper:</strong> Select a categorical area being served in special education that represents an area of focus. Prepare a paper (no more than 15 double spaced pages, not including title page, references, tables, and figures) that addresses a critical issue in an area of interest.</td>
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<tr>
<td><strong>Presentation:</strong> Prepare and deliver a 15-20 minute presentation that summarizes your topical paper. Presentations should be professionally prepared and utilize Microsoft Powerpoint.</td>
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<td><strong>Midterm:</strong> Midterm will be on first half of content discussed and will consist of short answer and essay questions.</td>
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<tr>
<td><strong>Final:</strong> Final will be on second half of content discussed and will consist of short answer and essay questions.</td>
</tr>
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**Course Evaluation:** Percentage of grade breakdown:

- **Preparation** (i.e., Chapter Critiques), Leading Discussion, and Participation: 20%
- **Midterm:** 50 points (25%)
- **Final:** 100 points (30%)
- **Issues Paper:** 50 points (15%)
- **Presentation:** 20 points (10%)
Grading Criteria
Your final grade will be based on a percentage and will be earned based on the following distribution:

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

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://aggiehonor.tamu.edu.

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.

Class Article Responses
Summary of Reading Discussion Group Roles

(REQUIRED) ROLE: BIG IDEA IDENTIFIER
Your job is to summarize or paraphrase the BIG IDEAS from each reading. This should take the form of 3-5 statements from each reading that "sum up" the reading assignment.

(REQUIRED) ROLE: QUESTION BUILDER FOR DISCUSSION
Your job is to develop a list of questions from each reading that the group can discuss that will help them understand the main points of the assigned reading(s). Don’t worry about the small details. The task is to help people talk over the big ideas in the reading and to share reactions to the text. [Be prepared with your own brief answers to your questions.]

(REQUIRED) ROLE: PASSAGE MASTER
Your job is to locate a few special passages or direct quotes that are important in the reading assignment. These may provide key information, back up the information given, or summarize the author’s key points. They might also be passages that strike your fancy for some reason, are particularly well written, or might be controversial or contradictory with other passages or other information learned in class. You may read passages aloud, ask others to read them, or have the circle read them silently and then discuss them.

(OPTIONAL) ROLE: GRAPHIC ORGANIZER
Your job is to construct a concept map or flow chart that visualizes how the ideas, concepts, or arguments are presented and related to each other from the reading(s), previous discussions, or between the articles. You can download a trial copy of Inspiration, or use word shapes to develop the graphic organizer.

(OPTIONAL) ROLE: ARGUMENT ANALYZER
Your job is to identify the main arguments in the article and make them explicit. Extract the main arguments from the text. The sometimes be identified from a thesis statement, purpose statement, or position the author is attempting to make.

(OPTIONAL) ROLE: VOCABULARY BUILDER/BUZZWORD BINGO/JARGON COLLECTOR
"Whoever Owns the Language Owns the Conversation." Your job is to develop a list of key words and concepts that are important to the understanding of the reading. You need to write down the definitions or a brief explanation of the words and concepts which you select from the reading.
(REQUIRED but Rotate) ROLE: NOTE TAKER, QUESTION COLLECTOR, AND PROCESS CHECKER

You don't need to come to class with a prep sheet since your task is performed during the class session. Your job is two-fold. First, during the discussion you are to (a) take notes on the discussion that will be distributed to the group, (b) generate a list of list of additional questions, perhaps those you might like for the instructor or some other person in class to address that arise from the discussion, and (c) identify to whom the question might be addressed (other students or the instructor). You are to review the group process for the class session with the group and identify highlights or problems in the group's work. E.g., what worked in this session—and what could be improved and how?

AGENDA

Readings from the Handbook of Special Education

I. Historical and Contemporary Issues in Educating Exceptional Learners, Section Editor, James M. Kauffman, University of Virginia

Introduction

1. A History of Special Education, Michael M. Gerber


5. Special Education and Teacher Preparation, Margo Mastropieri, Tom Scruggs, & Sara Mills

II. Legal Aspects of Special Education, Section Editor, Mitchell L. Yell, University of South Carolina

Introduction

6. The Individuals with Disabilities Education Act: The Evolution of Special Education Law, Mitchell L. Yell, Antonis Katysiannis, & M. Renee Bradley

7. Free Appropriate Public Education, Mitchell L. Yell & Jean B. Crockett

8. Individualized Education Programs for Children with Disabilities, Barbara D. Bateman
9. **Least Restrictive Environment**, Michael Rozalski, Jason Miller, & Angie Stewart

---

### III. The General Education Context of Special Education, Section Editor, Naomi P. Zigmond, University of Pittsburgh

**Introduction**


11. **Standards-Based Reforms and Students with Disabilities**, Martha L. Thurlow & Rachel F. Quenemoen


13. **General and Special Education Are (and Should Be) Different**, Naomi Zignond & Amanda Kloo

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### IV. Categorical Issues in Special Education, Section Editors, Daniel P. Hallahan & Paige C. Pullen, University of Virginia

**Introduction**


15. **Learning Disabilities**, Paige C. Pullen, Holly B. Lane, Kristen E. Ashworth, & Shelly P. Lovelace

16. **Attention-Deficit/Hyperactivity Disorder**, Karen J. Rooney

17. **Emotional and Behavioral Disorders**, Timothy J. Landrum

18. **Communication Disorders**, Filip Loncke

19. **Deaf and Hard of Hearing Students**, Jean F. Andrews, Pamela C. Shaw, & Gabriel Lomas

20. **Blind and Low Vision**, George J. Zimmerman & Kim Zebehazy


23. **Multiple and Severe Disabilities**, Susan Bruce

24. **Special Gifts and Talents**, Carolyn M. Callahan

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### V. Assessment of Students with Disabilities, Section Editor, Jennifer H. Lindstrom, University of Georgia
Introduction

25. High-Stakes Testing and Accommodations, Jennifer H. Lindstrom


VI. Policy and Administration of Special Education, Section Editor, Jean B. Crockett, University of Florida

Introduction

27. Conceptual Models for Leading and Administrating Special Education, Jean B. Crockett

28. Fiscal Policy and Funding for Special Education, Tom Parrish & Jenifer Harr-Robins

29. Using Professional Standards to Inform Leadership in Special Education, Mary Lynn Boscardin

30. Factors Influencing Special Education Teacher Quality and Effectiveness, Bonnie S. Billingsley

VII. Instructional Issues for Students with High Incidence Cognitive Disabilities, Section Editor, John W. Lloyd, University of Virginia

Introduction

31. Reading, Paige C. Pullen & Deanna B. Cash

32. Writing and Students with Disabilities, Steve Graham & Karen R. Harris

33. The Development of Arithmetic and Word-Problem Skill Among Students with Mathematics Disability, Lynn S. Fuchs, Sarah R. Powell, Pamela M. Seethaler, Paul T. Cirino, Jack M. Fletcher, Douglas Fuchs, & Carol L. Hamlett

34. Science and Social Studies, Tom Scruggs, Margo Mastropieri, & Lisa Marshak

35. Physical Education, Luke E. Kelly & Martin C. Block

36. Career and Technical Education, Maureen A. Schloss & Philip L. Gunter

37. Technology and Academic Instruction Considerations for Students with High-Incidence Cognitive Disabilities, Cheryl A. Wissick & J. Emmet Gardner

VIII. Instructional Issues for Students with Low Incidence Cognitive Disabilities, Section Editor, Adelle Renzaglia, University of Illinois

Introduction

38. Educating Students with Significant Cognitive Disabilities: Historical Overview and Future Projections, Fred Spooner & Fredda Brown
39. Systematic Instruction of Students with Severe Disabilities, Erik Drasgow, Mark Wolery, James Halle, & Zahra Hajiaghamohseni

40. Instructional Contexts, John McDonnell

41. Access to General Education Curriculum for Students with Significant Cognitive Disabilities, Mike L. Wehmeyer

42. Preparing Students with Significant Cognitive Disabilities for Life Skills, Stacy K. Dymond

IX. Transition of Adults with High Incidence Disabilities, Section Editor, David J. Scanlon, Boston College

Introduction

43. Transition to Post Secondary Education, Joseph W. Madaus & Manju Banerjee

44. Choice Patterns and Behaviors of Work-Bound Youth with High Incidence Disabilities, Jay W. Rojewski & Noel Gregg

45. Transition to Independent Living, David Scanlon, Jim Patton, & Marshall Raskind

X. Transition of Adults with Low Incidence Disabilities, Section Editor, M. Sherrill Moon, University of Maryland

Introduction

46. Preparing Students with Low Incidence Disabilities to Work in the Community, Katherine J. Inge & M. Sherrill Moon

47. Preparing Students with Low-Incidence Disabilities for Community Living Opportunities, Jane M. Everson & Meghan H. Trowbridge

XI. Parent and Family Issues in Special Education, Section Editor, George H. S. Singer, University of California at Santa Barbara

Introduction


49. Resilience in Families of Children with Disabilities: Risk and Protective Factors, George Singer, Christine Maul, Mian Wang, & Brandy Ethridge

50. Promoting Family Outcomes in Early Intervention, Don B. Bailey, Jr., Melissa Raspa, Betsy P. Humphreys, & Ann M. Sam

XII. Early Identification and Intervention in Exceptionality, Section Editor, Maureen A. Conroy, Virginia Commonwealth University
Introduction

51. Advances in Theory, Assessment and Intervention with Infants and Toddlers with Disabilities, Carl J. Dunst


53. Frameworks for Guiding Program Focus and Practices in Early Intervention, Patricia A. Snyder, Tara W. McLaughlin, & Maria K. Denney

54. Early Identification and Intervention in Gifted Education: Developing Talent in Diverse Learners, Catherine M. Brighton & Jane M. Jarvis

XIII. Cultural and International Issues in Special Education, Section Editor, Dimitris Anastasiou, University of Western Macedonia

Introduction

55. Ethnicity and Exceptionality, Dimitris Anastasiou, Ralph Gardner, III, & Domna Michail

56. Gender and Exceptionality, Martha J. Coutinho & Donald P. Oswald

57. International Differences in Provision for Exceptional Learners, Dimitris Anastasiou & Clayton Keller

XIV: Class Presentations

*NOTE: This schedule is subject to change based on guest speaker availability and based on the collective needs of the class. A revised agenda will be posted ahead of time.
Important information from the Registers Office:

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<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2</td>
<td>Wednesday. Graduation application opens for all students planning to</td>
</tr>
<tr>
<td></td>
<td>graduate in May 2013.</td>
</tr>
<tr>
<td>January 11</td>
<td>Friday. 5 p.m. Last day to register for spring semester classes.</td>
</tr>
<tr>
<td></td>
<td>Refer to <a href="http://finance.tamu.edu/sbs">http://finance.tamu.edu/sbs</a> for tuition and fee due dates.</td>
</tr>
<tr>
<td>January 14</td>
<td>Monday. First day of spring semester classes.</td>
</tr>
<tr>
<td>January 18</td>
<td>Friday. 5 p.m. Last day for adding/dropping courses for the spring</td>
</tr>
<tr>
<td></td>
<td>semester.</td>
</tr>
<tr>
<td>January 21</td>
<td>Monday. Martin Luther King, Jr. Day. Faculty and Staff holiday.</td>
</tr>
<tr>
<td>February 15</td>
<td>Friday. Last day to apply for all degrees to be awarded in May without</td>
</tr>
<tr>
<td></td>
<td>a late fee.</td>
</tr>
<tr>
<td>March 4</td>
<td>Monday. noon. Mid-semester grades due.</td>
</tr>
<tr>
<td>March 11-15</td>
<td>Monday-Friday. Spring Break.</td>
</tr>
<tr>
<td>March 15</td>
<td>Friday. Faculty and Staff holiday.</td>
</tr>
<tr>
<td>March 29</td>
<td>Friday. Reading day, no classes.</td>
</tr>
<tr>
<td>April 2</td>
<td>Tuesday. 5 p.m.</td>
</tr>
<tr>
<td></td>
<td>· Last day for all students to drop courses with no penalty (Q-drop).</td>
</tr>
<tr>
<td></td>
<td>· Last day to change Kinesiology 198/199 grade type.</td>
</tr>
<tr>
<td></td>
<td>· Last day to officially withdraw from the University.</td>
</tr>
<tr>
<td>April 11-25</td>
<td>Thursday-Friday. Preregistration for the 2013 summer and fall</td>
</tr>
<tr>
<td></td>
<td>semesters.</td>
</tr>
<tr>
<td>April 21</td>
<td>Sunday. Muster. Campus ceremony.</td>
</tr>
<tr>
<td>April 29</td>
<td>Monday. Prep day, classes meet. No regular course exams (except for</td>
</tr>
<tr>
<td></td>
<td>laboratory and one-hour classes) shall be given on these days.</td>
</tr>
<tr>
<td>April 30</td>
<td>Tuesday.</td>
</tr>
<tr>
<td></td>
<td>· Last day of spring semester classes.</td>
</tr>
<tr>
<td></td>
<td>· Last day to apply for all degrees to be awarded in May.</td>
</tr>
<tr>
<td></td>
<td>· Redefined day, students attend their Friday classes.</td>
</tr>
<tr>
<td></td>
<td>· Prep day, classes meet. No regular course exams (except for laboratory</td>
</tr>
<tr>
<td></td>
<td>and one-hour classes) shall be given on these days.</td>
</tr>
<tr>
<td>May 1-2</td>
<td>Wednesday-Thursday. Reading days, no classes.</td>
</tr>
<tr>
<td>May 3, 6-8</td>
<td>Friday, Monday-Wednesday. Spring semester final examinations for all</td>
</tr>
<tr>
<td></td>
<td>students.</td>
</tr>
</tbody>
</table>
May 9  Thursday. 6 p.m. Grades for degree candidates due.

May 10  Friday. 5 p.m. Last day for May undergraduate degree candidates to apply for Tuition Rebate.

May 10-11   Friday-Saturday. Commencement and Commissioning.

May 13  Monday. noon. Final grades for all students due.

* All dates and times are subject to change.
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
* Submit original form and attach a course syllabus.*

Form Instructions

1. Course request type: ☑ Graduate ☐ First Professional (e.g., DVM, JD, MD, etc.)
2. Request submitted by (Department or Program Name): Department of Veterinary Pathobiology
3. Course prefix, number and complete title of course: VTMI 604 Amazon Field School
4. Catalog course description (not to exceed 50 words):
   Investigation of social and ecological complexities of biodiversity conservation in tropical ecosystems; biological and social science approaches to evaluate causes, consequences, and solutions to biodiversity loss through ecology, culture, and governance.

5. Prerequisite(s): A minimum of 2.0 GPA and approval of instructor
   WFSC 654 and RPTS 654
   Cross-listed with: VTPB 404, RPTS 454, and WFSC 454
   Stacked with: 
   Cross-listed courses require the signature of both department heads.

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

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

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

9. 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)
   any master's or doctoral program

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

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

12. Prefix Course # Title (excluding punctuation)

<table>
<thead>
<tr>
<th>VTMI</th>
<th>604</th>
<th>Amazon Field School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lect.</td>
<td>Lab</td>
<td>SCH</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Approval recommended by:
Linda L. Logan

Department Head or Program Chair (Type Name & Sign) Date
Gary D. Ellis 2/22/14

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

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 – 04/14
Syllabus
Applied Biodiversity Science NSF-IGERT Program
AMAZON FIELD SCHOOL
Summer I 2014
RPTS 654/WFSC 654/VTMI 604
11 May – 29 May 2014
Tambopata, Peru

Instructors:

Donald Brightsmith
Veterinary Pathobiology
dbrightsmith@cvm.tamu.edu
(979) 458-0563

Leslie Ruyle
Conflict and Development
ruyle@tamu.edu
(979) 458-9397

Lee Fitzgerald
Wildlife Fisheries Sciences
lfitzgerald@tamu.edu
(979) 862-7480

Amanda Stononza
Recreation, Parks and Tourism Sciences
astronza@tamu.edu
(979) 845-8931

Local Counterparts:
Rainforest Expeditions
Native Community of Infierno

Description: This course is designed to investigate the social and ecological complexities of biodiversity conservation in tropical ecosystems. We will use a variety of field methods from the biological and social sciences to evaluate the causes, consequences, and solutions to biodiversity loss through the lenses of ecology, culture, and governance.

Prerequisites: Students must have a minimum 2.0 GPA, and approval from the instructor to participate in this course. There are no other prerequisites for participation in the course.

Textbook: There is no required textbook for this course. We will provide PDFs of selected journal articles.

Field Site: The course will take place in the Tambopata National Reserve and Bahuaja Sonene National Park in the Department of Madre de Dios, Peru. The region has some of the highest recorded levels of biodiversity in the world, but it is vulnerable to many new threats, including extensive agriculture, gold mining, illegal logging, and land speculation associated with the Inter-Oceanic Highway.

Activities: We will explore a variety of terrestrial and freshwater habitats in various settings, including two ecotourism lodges, a frontier town, a national park, and a local community. Interdisciplinary teams will examine all sides of complex issues surrounding the region's conservation challenges, talking with conservation practitioners and scientists.

Guiding Questions:
1) What are the threats to biodiversity and human livelihoods in Tambopata? What are the responses from local institutions and actors?
2) What is the role of scientific inquiry in addressing threats to biodiversity and human livelihoods?
3) How can social scientists and natural scientists collaborate in the field?
4) In “cultural landscapes,” how do we see nature? In “natural landscapes,” how do we see culture?
Learning Activities
- Collaborate in teams to gather ecological, cultural, and economic information on the following Conservation Case Studies:
  a) WILDLIFE USE AND CONSERVATION: Ecological Challenges of Balancing Consumptive and Non-consumptive Uses
  b) COMMUNITIES AND WATER: Governing Fish, Otters, Miners, and Tourists
  c) FORESTS AND CHOICES: Managing for Charcoal, Palm Fruits, Macaws, and Brazil Nuts
- Keep a journal of field notes and observations
- Present findings on Conservation Case Studies

Learning outcomes
- Students will demonstrate the ability to record relevant notes and observations in a field notebook.
- Students will employ effective communication and collaboration skills with colleagues in the biological and social sciences.
- Students will be able to explain the role of scientific inquiry in addressing threats to biodiversity and human livelihoods.
- Students will appraise the social and biological context in which issues of tropical biodiversity conservation are played out.
- Students will apply both data and perspectives from the biological and social sciences to inform decisions when addressing threats to biodiversity and human livelihoods.

Course Grades

Graduate students:

<table>
<thead>
<tr>
<th>Level of participation</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Discussions</td>
<td>200</td>
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<tr>
<td>Field trips</td>
<td>150</td>
</tr>
<tr>
<td>Field research</td>
<td>150</td>
</tr>
<tr>
<td>Compliance with rules</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presentations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Group presentation</td>
<td>200</td>
</tr>
<tr>
<td>Presentation on proposed thesis research</td>
<td>100</td>
</tr>
<tr>
<td>Research skill presentation</td>
<td>100</td>
</tr>
</tbody>
</table>

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1000


Graduate students will be required to complete a presentation of a research skill in the field to the remainder of the class. The will be graded on their ability to clearly communicate the reasons to use this technique and demonstrate its use. They will also be required to make a short (10 – 15 min) formal presentation of their proposed thesis research in the format of a presentation for a scientific meeting. The graduate students will also be graded on their leadership roles within their research groups. Leadership responsibilities during specific research activities will be rotated among graduate students and this will be evaluated by the accompanying faculty.
If an assignment is completed after the due date, the grade will be reduced at a rate of up to 10% per day. Exceptions for this rule may be made for illness, TAMU-approved excused absence or instructor permission. All students will obtain full participation for each activity if they attend the activity and listen to the presentations given by the instructors. Students who must be reprimanded for talking or otherwise interrupting course activities or not remaining with the group for the duration of the activity will receive reduced grades (reprimanded once – 5% of total activity points, reprimanded twice – 10%, and then 15% reduction for each additional reprimand).

**Attendance and make-up policies:**
Students are required to attend all activities unless they are prohibited from doing so by TAMU approved excused absence, illness, logistical problems (transportation, etc.) which are outside of their control or instructor permission. Failure to participate in required activities in the absence of illness, logistical problems or other extenuating circumstances will be penalized by the loss of up to 50 points per activity missed.

**Make-up Policy:**
There will be no makeups for regularly scheduled activities. However, students forced to miss trips, discussions or activities can request to be briefed on them by the instructors. If students are unable to give their group presentations at the appointed time, instructors will find an alternative time for the presentation if timing and logistics allow. The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details (http://studentrules.tamu.edu/rule07). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

1) Participation in an activity that is required for a class and appears on the university authorized activity list at: https://studentactivities.tamu.edu/app/sponsauth/index
2) Death or major illness in a student's immediate family.
3) Illness of a dependent family member.
4) Participation in legal proceedings or administrative procedures that require a student's presence.
5) Religious holy day. NOTE: Prior notification is NOT required.
6) Injury or illness that is too severe or contagious for the student to attend class.
   a) Injury or illness of three or more class days:
      Student will provide a medical confirmation note from his or her medical provider within one week of the last date of the absence (see Student Rules 7.1.6.1)
   b) Injury or illness of less than three class days:
      Student will provide one or both of these (at instructor’s discretion), within one week of the last date of the absence:
      (i.) Texas A&M University Explanatory Statement for Absence from Class form available at: http://attendance.tamu.edu
      or (ii.) Confirmation of visit to a health care professional affirming date and time of visit.
7) Required participation in military duties.
8) Mandatory admission interviews for professional or graduate school that cannot be rescheduled.

Other absences may be excused at the discretion of the instructor with prior notification and proper documentation. In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.
Study Abroad Course Itinerary – (see attachment for proposed itinerary)

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
Scholastic misconduct is defined broadly as "any act that violates the rights of another student in academic work or that involves misrepresentation of your own work." Plagiarism is one of the worst academic offenses, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student.

The Aggie Honor Code
"An Aggie does not lie, cheat, or steal, and or tolerate those who do"
The Aggie Code of Honor is an effort to unify the aims of all Texas A&M men and women toward a high code of ethics and personal dignity. For most, living under this code will be no problem, as it asks nothing of a person that is beyond reason. It only calls for honesty and integrity, characteristics that Aggies have always exemplified. The Aggie Code of Honor functions as a symbol to all Aggies, promoting understanding and loyalty to truth and confidence in each other. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, Part 1, Section 20 which can be found on line at: http://student-rules.tamu.edu. Any suspected instances of scholastic dishonesty will be investigated and resolved according to the procedures outlined in the new Aggie Honor System: http://aggiehonor.tamu.edu.

Types of Academic Misconduct
There are several types of academic misconduct. The six most common ones that you should be aware of are:

1. Cheating - Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication - Making up data or results, and recording or reporting them; submitting fabricated documents.
3. Falsification - Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
4. Multiple Submissions - Submitting substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism - The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.
6. Complicity - Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty.
<table>
<thead>
<tr>
<th>Time</th>
<th>Presenter</th>
<th>Organization</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>Donald Brightsmith</td>
<td>Texas A&amp;M, Applied Biodiversity Sciences Program</td>
<td>Welcome and opening of symposium</td>
</tr>
<tr>
<td>9:10 am</td>
<td>Juan Carlos Flores</td>
<td>Grupo de Trabajo de la Sociedad Civil para la Interoceánica Sur – Perú</td>
<td>Posición de la sociedad civil respecto a la construcción de la carretera Interoceánica Sur.</td>
</tr>
<tr>
<td>9.55 am</td>
<td>Juan Loja</td>
<td>ISUR</td>
<td>Proyectos de desarrollo y conservación a realizarse en el ámbito de la Interoceánica Sur</td>
</tr>
<tr>
<td>10:40 am</td>
<td>Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.00 am</td>
<td>Carlos Sanchez and Deyvis Huaman</td>
<td>AIDER</td>
<td>Contrato de administración parcial Reserva Nacional Tambopata y el Parque Nacional Bahuaja Sonene</td>
</tr>
<tr>
<td>11.45 am</td>
<td>Leslie Ruyle</td>
<td>TAMU</td>
<td>TBA</td>
</tr>
<tr>
<td>12:30 pm</td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.30 pm</td>
<td>Ramón Rivero</td>
<td>Sociedad Peruana de Derecho Ambiental</td>
<td>Mecanismos de conservación privada desarrollándose en Madre de Dios</td>
</tr>
<tr>
<td>3.15 pm</td>
<td>Cesar Ascorra</td>
<td>CARITAS</td>
<td>Impacto social y ambiental de la minería en Madre de Dios</td>
</tr>
<tr>
<td>4.00 pm</td>
<td>Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.15</td>
<td>Chantelle Murtagh</td>
<td></td>
<td>Indigenous peoples of Madre de Dios - Politics and indigenous movements</td>
</tr>
<tr>
<td>5:00</td>
<td>John Janovec</td>
<td>Botanical Research Institute of Texas</td>
<td>Tropical botany and aguajales</td>
</tr>
</tbody>
</table>
Detailed schedule

11 May
Fly to Peru spend the night in Lima

12 May
Fly to Puerto Maldonado and take the boat up to Posada Amazonas
Move in to rooms
Brief guided walk in forest (depending on arrival time)
Dinner
Introduction to the course and Conservation Case Studies
Overnight: Posada Amazonas

13 May
Overnight Posada Amazonas
Breakfast
Communities and water activity: Visit to Oxbow Lake
Lunch
Basic introduction to the ecology of Conservation Case Studies: Forest walk Focus on the
forest and do NOT go to the canopy tower (wildlife, Brazil nuts, Dipterex trees, inland
water bodies, wildlife)
Field notes lecture
Dinner
Discussion: Local maps and satellite imagery: connecting ecology, culture and governance
Students choose their case study teams

14 May
Overnight Centro Ñape
Wildlife techniques: Bird and Mammal Identification (all go to canopy tower)
Breakfast
Leave after breakfast (move out of rooms take an overnight bag leave large luggage)
Tour of Centro Ñape and Don Honorato presentation about medicinal plants
Lunch at Nape
Participatory mapping activity
Hunting and forest types walk (from late afternoon in to early evening return after dark)
Late Dinner
Brief discussion of transect methodology and estimating animal abundances

15 May
Overnight Posada Amazonas
Early AM bird and primate transect methodology activity
Breakfast
Return to Posada after Breakfast
Forests and Choices discussion and field lecture (walk down to harvested Brazil nut tree on
way to big Kapok. Go to big Kapok, sit there and talk about the ecology of hardwoods versus
softwoods, human park interactions, use of hardwoods and softwoods.)
Lunch
Tour of Posada Amazonas (with lodge manager, talk about Rainforest Alliance Certification,
Green innovations, the importance of the lodge to the community etc.)
Talk by Stronza on Tourism in Infierno
Dinner
Discussion of time at Centro Ñape

16 May
Overnight Puerto Maldonado
Early AM fishing activity (go super early 4 AM?) to make sure that we are early enough to be able to clearly see the transition from NIGHT fish to Day fish
Travel to Puerto Maldonado,
Visit to Mining site 2 hour drive to Quebrada Guacamayo
Lunch in car
Move in to Peru Amazonico
Lecture: Brief intro to the town and safety briefing
Dinner (students on their own)

17 May
Overnight Puerto Maldonado
9:00 AM – 5 PM Conservation Symposium (see schedule above)
Quick discussion on plans for visiting the market
Dinner (on your own)
Free Time

18 May
Overnight Puerto Maldonado
6 AM Visit to the local market
Students will be given instructions to search for information regarding a variety of local and regional products (wildlife, hardwood charcoal, Brazil nuts, Aguaje palm, edible palm larvae, fish, and gold). Breakfast on your own.
Lunch in PEM
2 PM Tour of farm with Victor Zambrano
Discussion of Market and or Victo Zambrano
Dinner on own

19 May
Overnight Infierno
8 AM pickup
Brief tour of the center of the community
Visit with community hunters
Meet with member of the Control Committee of the Native Community of Infierno
Box lunch provided by RFE
Transfer to homestays (split among Duran, Mishaja and one or two other sites)

20 May
Overnight Infierno
Breakfast
Ethnographic and biological field notes, participant observation, and informal conversations with local families
Lunch and Dinner with families

21 May
Overnight Infierno
Breakfast
 Separate time in three households
Ethnographic and biological field notes, participant observation, and informal conversations with local families
Lunch and Dinner with families

22 May
Overnight Tambopata Research Center
11 AM Infierno to Tambopata Research Center (4 hours on river)
Move in to rooms
Dinner
Discussion about time in Infierno

23 May
Overnight Tambopata Research Center
Early AM Wildlife: Visit to parrot clay lick
Breakfast
Forest walk (wildlife observation, macaw nest sites natural and artificial in Dipteryx, wildlife identification, visit small water bodies in trail system)
Lunch
Free time
Dinner
Faculty Research Lecture: Brightsmith (Wildlife: Parrot community nesting)

24 May
Overnight Tambopata Research Center
Breakfast 7:30
Wildlife research activity
Lunch
Forests research activity
Dinner
Wildlife techniques: Bat mist netting

25 May
Overnight Tambopata Research Center
Optional Early AM Visit to parrot clay lick or other activity
Breakfast
Aquatics activity: Trip to a stream for net fishing
Lunch
Team work on Conservation Case Studies
Dinner
Free time or night hike

26 May
Overnight Tambopata Research Center
Free time work on Conservation Case Studies
Lunch
Presentation of Conservation Case Studies findings
Dinner

27 May
Overnight El Gato
Early departure to travel from TRC to El Gato
Lunch on boat or at El Gato
Free time for swim or forest exploration
Final dinner at El Gato

28 May
Travel from El Gato to Puerto Maldonado
11:35 AM Flight to Lima
Afternoon in Lima (shopping and museums)
Overnight flight back to the USA

29 May
Return to TAMU
Syllabus
Applied Biodiversity Science NSF-IGERT Program
AMAZON FIELD SCHOOL
Summer I 2014
RPTS 454/WFSC 454/VTPB 404
11 May – 29 May 2014
Tambopata, Peru

Instructors:

Donald Brightsmith
Veterinary Pathobiology
dbrightsmith@cvm.tamu.edu
(979) 458-0563

Leslie Ruyle
Conflict and Development
ruyle@tamu.edu
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Lee Fitzgerald
Wildlife Fisheries Sciences
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Amanda Stronza
Recreation, Parks and Tourism Sciences
astronza@tamu.edu
(979) 845-8931

Local Counterparts:
Rainforest Expeditions
Native Community of Infierno

Description: This course is designed to investigate the social and ecological complexities of biodiversity conservation in tropical ecosystems. We will use a variety of field methods from the biological and social sciences to evaluate the causes, consequences, and solutions to biodiversity loss through the lenses of ecology, culture, and governance.

Prerequisites: Students must have junior or senior standing along with a minimum 2.0 GPA, and approval of the instructor to participate in this course. There are no other prerequisites for participation in the course.

Textbook: There is no required textbook for this course. We will provide PDFs of selected journal articles.

Field Site: The course will take place in the Tambopata National Reserve and Bahuaja Sonene National Park in the Department of Madre de Dios, Peru. The region has some of the highest recorded levels of biodiversity in the world, but it is vulnerable to many new threats, including extensive agriculture, gold mining, illegal logging, and land speculation associated with the Inter-Oceanic Highway.

Activities: We will explore a variety of terrestrial and freshwater habitats in various settings, including two ecotourism lodges, a frontier town, a national park, and a local community. Interdisciplinary teams will examine all sides of complex issues surrounding the region's conservation challenges, talking with conservation practitioners and scientists.

Guiding Questions:
1) What are the threats to biodiversity and human livelihoods in Tambopata? What are the responses from local institutions and actors?
2) What is the role of scientific inquiry in addressing threats to biodiversity and human livelihoods?
3) How can social scientists and natural scientists collaborate in the field?
4) In "cultural landscapes," how do we see nature? In "natural landscapes," how do we see culture?
Learning Activities

- Collaborate in teams to gather ecological, cultural, and economic information on the following Conservation Case Studies:
  a) WILDLIFE USE AND CONSERVATION: Ecological Challenges of Balancing Consumptive and Non-consumptive Uses
  b) COMMUNITIES AND WATER: Governing Fish, Otters, Miners, and Tourists
  c) FORESTS AND CHOICES: Managing for Charcoal, Palm Fruits, Macaws, and Brazil Nuts
- Keep a journal of field notes and observations
- Present findings on Conservation Case Studies

Learning outcomes

- Students will demonstrate the ability to record relevant notes and observations in a field notebook.
- Students will employ effective communication and collaboration skills with colleagues in the biological and social sciences.
- Students will be able to explain the role of scientific inquiry in addressing threats to biodiversity and human livelihoods.
- Students will appraise the social and biological context in which issues of tropical biodiversity conservation are played out.
- Students will apply both data and perspectives from the biological and social sciences to inform decisions when addressing threats to biodiversity and human livelihoods.

Course Grades

Undergraduate students:

<table>
<thead>
<tr>
<th>Level of participation</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussions</td>
<td>200</td>
</tr>
<tr>
<td>Field trips</td>
<td>150</td>
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<td>Field research</td>
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<tr>
<td>Compliance with rules</td>
<td>100</td>
</tr>
<tr>
<td>Group presentations</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>800</td>
</tr>
</tbody>
</table>


If an assignment is completed after the due date, the grade will be reduced at a rate of up to 10% per day. Exceptions for this rule may be made for illness, TAMU-approved excused absence or instructor permission. All students will obtain full participation for each activity if they attend the activity and listen to the presentations given by the instructors. Students who must be reprimanded for talking or otherwise interrupting course activities or not remaining with the group for the duration of the activity will receive reduced grades (reprimanded once – 5% of total activity points, reprimanded twice – 10%, and then 15% reduction for each additional reprimand).

Attendance and make-up policies:
Students are required to attend all activities unless they are prohibited from doing so by TAMU approved excused absence, illness, logistical problems (transportation, etc.) which are outside of their control or
instructor permission. Failure to participate in required activities in the absence of illness, logistical problems or other extenuating circumstances will be penalized by the loss of up to 50 points per activity missed.

Make-up Policy:
There will be no makeups for regularly scheduled activities. However, students forced to miss trips, discussions or activities can request to be briefed on them by the instructors. If students are unable to give their group presentations at the appointed time, instructors will find an alternative time for the presentation if timing and logistics allow. The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details (http://studentrules.tamu.edu/rule07). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

1) Participation in an activity that is required for a class and appears on the university authorized activity list at: https://studentactivities.tamu.edu/app/sponsauth/index
2) Death or major illness in a student's immediate family.
3) Illness of a dependent family member.
4) Participation in legal proceedings or administrative procedures that require a student's presence.
5) Religious holy day. NOTE: Prior notification is NOT required.
6) Injury or illness that is too severe or contagious for the student to attend class.
   a) Injury or illness of three or more class days: Student will provide a medical confirmation note from his or her medical provider within one week of the last date of the absence (see Student Rules 7.1.6.1)
   b) Injury or illness of less than three class days: Student will provide one or both of these (at instructor’s discretion), within one week of the last date of the absence:
      (i.) Texas A&M University Explanatory Statement for Absence from Class form available at: http://attendance.tamu.edu
      or (ii.) Confirmation of visit to a health care professional affirming date and time of visit.
7) Required participation in military duties.
8) Mandatory admission interviews for professional or graduate school that cannot be rescheduled.

Other absences may be excused at the discretion of the instructor with prior notification and proper documentation. In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.

Study Abroad Course Itinerary – (see attachment for proposed itinerary)

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
Scholastic misconduct is defined broadly as "any act that violates the rights of another student in academic work or that involves misrepresentation of your own work." Plagiarism is one of the worst academic offenses, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student.

**The Aggie Honor Code**

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

The Aggie Code of Honor is an effort to unify the aims of all Texas A&M men and women toward a high code of ethics and personal dignity. For most, living under this code will be no problem, as it asks nothing of a person that is beyond reason. It only calls for honesty and integrity, characteristics that Aggies have always exemplified. The Aggie Code of Honor functions as a symbol to all Aggies, promoting understanding and loyalty to truth and confidence in each other. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, Part 1, Section 20, which can be found online at: http://student-rules.tamu.edu. Any suspected instances of scholastic dishonesty will be investigated and resolved according to the procedures outlined in the new Aggie Honor System: http://aggiehonor.tamu.edu.

**Types of Academic Misconduct**

There are several types of academic misconduct. The six most common ones that you should be aware of are:

1. **Cheating** - Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. **Fabrication** - Making up data or results, and recording or reporting them; submitting fabricated documents.
3. **Falsification** - Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
4. **Multiple Submissions** - Submitting substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. **Plagiarism** - The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.
6. **Complicity** - Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty.
Conservation Symposium in Puerto Maldonado (17 May).

<table>
<thead>
<tr>
<th>Time</th>
<th>Presenter</th>
<th>Organization</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>Donald Brightsmith</td>
<td>Texas A&amp;M, Applied Biodiversity Sciences Program</td>
<td>Welcome and opening of symposium</td>
</tr>
<tr>
<td>9:10 am</td>
<td>Juan Carlos Flores</td>
<td>Grupo de Trabajo de la Sociedad Civil para la Interoceánica Sur – Perú</td>
<td>Posición de la sociedad civil respecto a la construcción de la carretera Interoceánica Sur</td>
</tr>
<tr>
<td>9:55 am</td>
<td>Juan Loja</td>
<td>ISUR</td>
<td>Proyectos de desarrollo y conservación a realizarse en el ámbito de la Interoceánica Sur</td>
</tr>
<tr>
<td>10:40 am</td>
<td>Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.00 am</td>
<td>Carlos Sanchez and Deyvis Huaman</td>
<td>AIDER</td>
<td>Contrato de administración parcial Reserva Nacional Tambopata y el Parque Nacional Bahuaja Sonene</td>
</tr>
<tr>
<td>11.45 am</td>
<td>Leslie Ruyle</td>
<td>TAMU</td>
<td>TBA</td>
</tr>
<tr>
<td>12:30 pm</td>
<td>Lunch</td>
<td></td>
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<tr>
<td>2.30 pm</td>
<td>Ramón Rivero</td>
<td>Sociedad Peruana de Derecho Ambiental</td>
<td>Mecanismos de conservación privada desarrollándose en Madre de Dios</td>
</tr>
<tr>
<td>3.15 pm</td>
<td>Cesar Ascorra</td>
<td>CARITAS</td>
<td>Impacto social y ambiental de la minería en Madre de Dios</td>
</tr>
<tr>
<td>4.00 pm</td>
<td>Break</td>
<td></td>
<td></td>
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<tr>
<td>4.15</td>
<td>Chantelle Murtagh</td>
<td>Botanical Research Institute of Texas</td>
<td>Indigenous peoples of Madre de Dios - Politics and indigenous movements</td>
</tr>
<tr>
<td>5:00</td>
<td>John Janovec</td>
<td>Botanical Research Institute of Texas</td>
<td>Tropical botany and aguajales</td>
</tr>
</tbody>
</table>
Detailed schedule

11 May  Fly to Peru spend the night in Lima

12 May  Fly to Puerto Maldonado and take the boat up to Posada Amazonas
Move in to rooms
Brief guided walk in forest (depending on arrival time)
Dinner
Introduction to the course and Conservation Case Studies
Overnight: Posada Amazonas

13 May  Overnight Posada Amazonas
Breakfast
Communities and water activity: Visit to Oxbow Lake
Lunch
Basic introduction to the ecology of Conservation Case Studies: Forest walk Focus on the
forest and do NOT go to the canopy tower (wildlife, Brazil nuts, Dipteryx trees, inland
water bodies, wildlife)
Field notes lecture
Dinner
Discussion: Local maps and satellite imagery: connecting ecology, culture and governance
Students choose their case study teams

14 May  Overnight Centro Ñape
Wildlife techniques: Bird and Mammal Identification (all go to canopy tower)
Breakfast
Leave after breakfast (move out of rooms take an overnight bag leave large luggage)
Tour of Centro Ñape and Don Honorato presentation about medicinal plants
Lunch at Nape
Participatory mapping activity
Hunting and forest types walk (from late afternoon in to early evening return after dark)
Late Dinner
Brief discussion of transect methodology and estimating animal abundances

15 May  Overnight Posada Amazonas
Early AM bird and primate transect methodology activity
Breakfast
Return to Posada after Breakfast
Forests and Choices discussion and field lecture (walk down to harvested Brazil nut tree on
way to big Kapok. Go to big Kapok, sit there and talk about the ecology of hardwoods versus
softwoods, human park interactions, use of hardwoods and softwoods.)
Lunch
Tour of Posada Amazonas (with lodge manager, talk about Rainforest Alliance Certification,
Green innovations, the importance of the lodge to the community etc.)
Talk by Stronza on Tourism in Infierno
Dinner
Discussion of time at Centro Ñape

16 May  Overnight Puerto Maldonado
Early AM fishing activity (go super early 4 AM?) to make sure that we are early enough to be able to clearly see the transition from NIGHT fish to Day fish
Travel to Puerto Maldonado,
Visit to Mining site 2 hour drive to Quebrada Guacamayo
Lunch in car
Move in to Peru Amazonico
Lecture: Brief intro to the town and safety briefing
Dinner (students on their own)

17 May
Overnight Puerto Maldonado
9:00 AM – 5 PM Conservation Symposium (see schedule above)
Quick discussion on plans for visiting the market
Dinner (on your own)
Free Time

18 May
Overnight Puerto Maldonado
6 AM Visit to the local market
   Students will be given instructions to search for information regarding a variety of local and regional products (wildlife, hardwood charcoal, Brazil nuts, Aguaje palm, edible palm larvae, fish, and gold). Breakfast on your own.
Lunch in PEM
2 PM Tour of farm with Victor Zambrano
Discussion of Market and or Victo Zambrano
Dinner on own

19 May
Overnight Infierno
8 AM pickup
Brief tour of the center of the community
Visit with community hunters
Meet with member of the Control Committee of the Native Community of Infierno
Box lunch provided by RFE
Transfer to homestays (split among Duran, Mishaja and one or two other sites)

20 May
Overnight Infierno
Breakfast
Ethnographic and biological field notes, participant observation, and informal conversations with local families
Lunch and Dinner with families

21 May
Overnight Infierno
Breakfast
Separate time in three households
Ethnographic and biological field notes, participant observation, and informal conversations with local families
Lunch and Dinner with families

22 May
Overnight Tambopata Research Center
11 AM Infierno to Tambopata Research Center (4 hours on river)
Move in to rooms
Dinner
Discussion about time in Infierno

23 May
Overnight Tambopata Research Center
Early AM Wildlife: Visit to parrot clay lick
Breakfast
Forest walk (wildlife observation, macaw nest sites natural and artificial in Dipteryx, wildlife identification, visit small water bodies in trail system)
Lunch
Free time
Dinner
Faculty Research Lecture: Brightsmith (Wildlife: Parrot community nesting)

24 May
Overnight Tambopata Research Center
Breakfast 7:30
Wildlife research activity
Lunch
Forests research activity
Dinner
Wildlife techniques: Bat mist netting

25 May
Overnight Tambopata Research Center
Optional Early AM Visit to parrot clay lick or other activity
Breakfast
Aquatics activity: Trip to a stream for net fishing
Lunch
Team work on Conservation Case Studies
Dinner
Free time or night hike

26 May
Overnight Tambopata Research Center
Free time work on Conservation Case Studies
Lunch
**Presentation of Conservation Case Studies findings**
Dinner

27 May
Overnight El Gato
Early departure to travel from TRC to El Gato
Lunch on boat or at El Gato
Free time for swim or forest exploration
Final dinner at El Gato

28 May
Travel from El Gato to Puerto Maldonado
11:35 AM Flight to Lima
Afternoon in Lima (shopping and museums)
Overnight flight back to the USA

29 May
Return to TAMU
Course Changes
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

1. Request submitted by (Department or Program Name): BIOLOGY
2. Course prefix, number and complete title of course: BIOL 611 MOLEC BIOL DIFF & DEV

3. Change requested
   a. Prerequisite(s): From: _______________ To: _______________
   b. Withdrawal (reason): ________________________________
   c. Cross-list with: GENE 611

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

   d. Change in course title and description. Enter complete current course title and current course description in item 5; enter proposed course title and proposed course description in item 6. Complete item 7 for change in title.
   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 7. Attach a course syllabus.

4. For informational purposes only, please indicate course number if this course will be stacked: _______________

5. Complete current course title and current catalog course description: BIOL 611 - MOLECULAR BIOLOGY OF DIFFERENTIATION AND DEVELOPMENT. Major paradigms of eukaryotic gene regulation in terms of the role of gene expression during ontogeny and the effect of dysfunction in these processes on the neoplastic state. Cross-listed with NRSC 611.

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words): BIOL 611 - DEVELOPMENTAL GENETICS

7. a. As currently in course inventory:

   Prefix | Course # | Title (excluding punctuation)
   ------ | -------- | ----------------------------
   BIOL  | 611    | MOLEC BIOL DIFF & DEV

   Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | FICT Code | Level
   0    | 3   | 0   | 0                   | 0           | 0         | 5

   b. Change to:

   Prefix | Course # | Title (excluding punctuation)
   ------ | -------- | ----------------------------
   BIOL  | 611    | DEV GENETICS

   Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICT Code | Level
   0    | 3   | 0   | 0                   | 0           | 4         | 5         | 5

   Approval recommended by:
   Thomas D. McKnight
   Department Head or Program Chair (Name & Sign)
   Date

   Craig J. Coates
   Department Head or Program Chair (Name & Sign)
   (if cross-listed course)
   Date

   Submitted to Coordinating Board by:
   Chair, GECSCUC
   Date

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 02/11
Biology 611: Molecular Biology of Differentiation and Development

Bruce Riley (845-6494, briley@mail.bio.tamu.edu)  
Jim Erickson (862-2204, jerickson@mail.bio.tamu.edu)

Tuesday and Thursday 9:30-11:00, room 117 Heldenfels.

Aug. 27  
Overview of course objectives.  
Introduction to historical perspectives and basic concepts.

Aug. 29  
Intro to vertebrates  
Nodal signaling and organizer activity in zebrafish.


Sep. 3  
Wnt8 and coordination of AP and DV axes in zebrafish.


Sep. 5  
Epithelial-Mesenchymal Transition (EMT) in development & cancer.


Sep. 10  
Fgf, Bmp and DV patterning in zebrafish.


Sep. 12  
Delta-Notch signaling, neurogenesis, and regulation by ubiquitin ligase.

Sep. 17
Somitogenesis and molecular clocks.


Sep. 19
HOX/HOM genes and AP patterning.


Sep. 24
Hedgehog signaling and axon guidance.


Sep. 26
Intro to Drosophila
Drosophila axis determination (AP axis): Transcriptional control of development.


Oct. 1
Drosophila axis determination (DV axis): Transcriptional control of development.


Oct. 3


Oct. 8
Translational control of fly development.


Oct. 10
Dissection of the EGFR pathway in Drosophila eye development.


Oct. 15
Branching morphogenesis and tracheal development in Drosophila.


Oct. 17
Sex Determination.


Oct. 22
MIDTERM EXAM.

Oct. 24
Introduction to C. elegans
Axis determination.

Oct. 29
Convergence of multiple signals in C. elegans vulval induction.


Oct. 31
Programmed cell death and the CED pathway in C. elegans.


Nov. 5
Developmental timing: Heterochrony and regulation by micro-RNA.


Nov. 7
Aging and longevity.


Nov. 12
Introduction to Arabidopsis
Auxin signaling & symmetry-breaking.


Nov. 14
Cell signaling and meristem maintenance.

Nov. 19
Intro to Evo-Devo
Descent with modification.


Nov. 21
The concept of developmental modules.


Nov. 26
Developmental constraints and phenotypic variation.

Syllabus part 2

Course Objectives:
1. Learn general principles and specific mechanisms of development.
2. Become familiar with the advantages and limitations of commonly studied genetic model organisms.
3. Gain experience in critical reading and interpretation of primary research articles.

Course Format for class meetings:
We will be discussing literature papers in the order listed on the syllabus. Papers are available online through the electronic journals page of the Medical Sciences Library (only through an on-campus computer or through dial-up modem/connection through the University). http://library.tamu.edu/ or http://msl.tamu.edu/MSL/InfoRsrs/c/ejournal2.html. The instructors will assume that you have read the paper PRIOR to arriving at the meeting and are ready to discuss the following issues:

- What was the previous information that led to the question being asked in the paper?
- What is the hypothesis being tested?
- How does the hypothesis relate to or extend what we have discussed earlier or what you may know from other classes?
- What is the design and method of the experiments?
- What were the assays used to examine developmental events?
- How did their results address or relate to their hypothesis?
- Did they prove their point to your satisfaction? If not, what would you have liked to see them do?

Grading: Your grade will be based on four criteria, all weighted equally. The four criteria are as follows:

1) Attendance and participation during class discussions. Asking questions, raising points, answering questions posed by the instructors or classmates and volunteering information are some ways in which you can participate. Of course full participation also requires thorough reading of all assigned papers.

2) Homework assignments. For the first half of the semester, each paper will be accompanied by a set of homework problems designed to make you think about the paper on a deeper level. Homework is DUE at the beginning of the class session in which the paper will be discussed. NO late homework assignments will be accepted.

Notes on plagiarism: When answering homework problems, you may draw from information gleaned from books, articles, etc., but do not simply transcribe (copy word-for-word) any material written by others. You must state all concepts in your own words. If you are describing a complex concept or a model obtained from another author (as opposed to a general principle), use appropriate citation practices. Plagiarism is a very serious offense that has become increasingly common in recent years. Any student caught plagiarizing will receive zero credit for that homework assignment. If there is a
second offense, the student will be summarily dismissed from the course (with an automatic F) and may face expulsion from the university.

3) You will be responsible for presentation of papers for two class periods during the semester. This means providing background, understanding the experimental approaches and interpretations, critiquing experimental design or the authors’ conclusions, and being able to lead the group discussion. The background given in the paper will NOT generally be sufficient for your presentation. You should attempt to give a more in-depth introduction to the paper. You are encouraged to discuss your assigned paper with one of the instructors prior to your class presentation. Students are strongly advised to prepare well in advance to allow sufficient time to confer with the instructor and make necessary adjustments to your presentation. We suggest starting at least a week ahead of time if you have not done this type of presentation before.

4) A written midterm exam will be conducted halfway through the semester. The exam will test your understanding and recall of core concepts and developmental mechanisms covered during the first half of the semester. These concepts and mechanisms will also provide a foundation for class discussions in the second half of the semester.

Links that might be helpful:

http://flybase.bio.indiana.edu/

http://www.wormbase.org/

http://www.informatics.jax.org/

http://zfin.org

http://biocourse.bio.tamu.edu/faculty/pepper/awg/

(The last url has various links to sites related to Arabidopsis).
Special Consideration Items
MEMORANDUM

TO: Dr. Mark Zoran  
Chair, Graduate Council

THROUGH: Dr. John C. Criscione  
Assistant Dean for Graduate Programs  
Dwight Look College of Engineering

FROM: Amber Muenzenberger  
Director, Remote Learning and Outreach Education  
Dwight Look College of Engineering

SUBJECT: Distance Education Master of Engineering in Engineering

The Master of Engineering in Engineering is currently approved for on-campus, face-to-face delivery. We would like to offer the degree via distance education beginning spring 2015. Please see the attached approval and online delivery proposal forms for additional information.

Please contact me if you have any questions at atmberger@tamu.edu or 979-458-9719.
Texas A&M University
New Certificate, Bachelors, Masters, or Doctoral Program
Undergraduate • Graduate • Professional
• Proposal Checklist •

Program request type:  □ Undergraduate  ☑ Graduate  □ First Professional (e.g., DVM, JD, MD, etc.)
Requested by the Department or Unit of:  Dwight Look College of Engineering (CLEN)

Program Type, Level, Designation, Title, Description, Hours
Program Type:  □ Certificate Program  ☑ Degree Program
Program Level:  □ UG Certificate  □ Grad Certificate  □ Bachelor  ☑ Master  □ Doctoral  □ Professional
Degree Designation (i.e., BS, BA, MA, MS, MEng, MEd, PhD, EdD, etc.)  M. Eng. (Masters of Engineering)
Title of proposed program:  Masters of Engineering in Engineering
Proposed CIP Code (if known):  14.0101.00

Brief program description (provide a catalog description for undergraduate and graduate certificates):
The Masters of Engineering in Engineering is a 30 credit hour non-thesis degree that requires at least one major project as part of a class or internship. This degree program is currently offered on-campus, and the requirements and focus for the distance education program are to be identical to the on-campus program. This degree is intended for students who are seeking careers at the interface of traditional engineering disciplines and/or in new disciplines of engineering that are emerging. Hence, the precise coursework requirements are to be determined by the student’s advisory committee, chaired by an engineering faculty member who is a full member of the graduate faculty. A degree plan must be filed, and toward this end, a student should specify a particular engineering career path and work with their advisory committee to identify the relevant coursework. It is expected that the degree plan will be filed during the first semester of study. A final exam can be waived by approval of the student’s advisory committee—typically when a project presentation is done in lieu of the final exam. It is expected that the subject matter of this program will encompass multiple departments, and hence, oversight of this program will be maintained at the college level (Office of Graduate Programs within Engineering Academic and Student Affairs).

Minimum program semester credit hours (SCH)  Certificates - 12 hours*  Bachelors - 120 hours  Masters - 30 hours
Proposed program hours:  ———  ———  30
*12 hours minimum to appear on transcript

Certificate Programs  □ Embedded  Students take coursework that will result in a degree and certificate being earned at the same time.
                               □ Standalone  Non-degree seeking students take coursework to earn a certificate only (no degrees are awarded).

Off-Campus or Distance Delivery
% of Program a student can take off-campus or through Distance Education  Program Start Date  SACSCOC Approval**  When Provost needs to inform SACSCOC
□ 25%  ———  Notification Only  ———
□ 50%  ———  Approval Required  6 months before first day of program
□ 80%  ———  Approval Required  6 months before first day of program
☑ 100%  Spring 2015  Approval Required  6 months before first day of program

**Notification letter arranged through the Vice Provost for Academic Affairs and sent by TAMU President.

Program Delivery Mode
□ On-campus  ———
□ Broadcast / TTVN  ———
□ Specific off-campus location***  ———
☑ Distance Education / Internet  In-State  Out-of-State  Start Date  Fall 2014
□ Out-of-Country  ———

Will this program be offered with another institution?  □ Yes  □ No
If yes, contact the Vice Provost for Academic Affairs for additional reporting requirements.

***Is this an approved SACSCOC location?  □ Yes  □ No
If no, a program prospectus must be sent to SACSCOC.
Texas A&M University
New Certificate, Bachelors, Masters, or Doctoral Program
Undergraduate • Graduate • Professional
• Proposal Checklist •

Approved locations as of March 2012: TAMU-Galveston, TAMU-Qatar, University Center-The Woodlands, CityCentre-Houston, Dubai and Saudi Arabia.

Program Funding
Has program funding been finalized at the department or college level?
If no, explain or attach budget: ________  ✔ Yes □ No

Will new costs for the first five years of the program be under $2 million?
If new costs exceed $2 million, coordinating board approval is required.  ✔ Yes □ No
Texas A&M University
New Certificate, Bachelors, Masters, or Doctoral Program
Undergraduate • Graduate • Professional
• Proposal Checklist •

Approved locations as of March 2012: TAMU-Galveston, TAMU-Qatar, University Center-The Woodlands, CityCentre-Houston, Dubai and Saudi Arabia.

Program Funding
Has program funding been finalized at the department or college level?  
  Yes □ No
  If no, explain or attach budget: _____

Will new costs for the first five years of the program be under $2 million?  
  Yes □ No
  If new costs exceed $2 million, coordinating board approval is required.
Submitted by (Contact Person):

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amber Muenzenberger</td>
<td><a href="mailto:atmberger@tamu.edu">atmberger@tamu.edu</a></td>
</tr>
</tbody>
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<tr>
<th>Title</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Director of Remote Learning &amp; Outreach Education</td>
<td>979.458.9717</td>
</tr>
</tbody>
</table>

Certification Statement

By signing below, the Dean of the College certifies the proposed program complies with coordinating board standards. If the program is delivered through Distance Education, the Dean of the College certifies that they are following the *Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically*.

Use additional signature lines if program is between three or more departments or colleges.

<table>
<thead>
<tr>
<th>Signature, Department Head or Interdisciplinary Chair</th>
<th>Date</th>
</tr>
</thead>
</table>

Typed or Printed Name

<table>
<thead>
<tr>
<th>Chair, College Review Committee</th>
<th>Date</th>
</tr>
</thead>
</table>

Dean of College | Date

| Chair, University Curriculum Committee or Graduate Council | Date |

Additional Approvals Required: Faculty Senate and President.
DISTANCE EDUCATION
ELECTRONIC TO INDIVIDUALS (ONLINE DELIVERY) APPROVAL FORM

Submitted by:

☑ Texas A&M University
☐ Texas A&M University- Central Texas
☐ Texas A&M University-Commerce
☐ Texas A&M University-Corpus Christi
☐ Texas A&M University-Kingsville
☐ Texas A&M University-San Antonio
☐ Texas A&M University-Texarkana
☐ Texas A&M International University
☐ Prairie View A&M University
☐ Tarleton State University
☐ West Texas A&M University
☐ Texas A&M Health Science Center

Distance Education: Electronic to Individuals (Online Delivery) Authorization Request

Please list the proposed degree and CIP code:

Degree: Masters of Engineering in Engineering

CIP Code: 14.0101.00

When is the effective date of the proposed program?

Effective Date: Spring 2015

**Please note:** This proposed program cannot be advertised as an online delivered degree program until the A&M System Office of Academic Affairs has approved it and the Texas Higher Education Coordinating Board has been notified.

Summary of Proposal (Include Background Information and Rationale for the change.)

The Masters of Engineering in Engineering is a 30 credit hour non-thesis degree that requires at least one major project as part of a class or internship. This degree program is currently offered on-campus, and the requirements and focus for the distance education program are to be identical to the on-campus program. This degree is intended for students who are seeking careers at the interface of traditional engineering disciplines and/or in new disciplines of engineering that are emerging. Hence, the precise coursework requirements are to be determined by the student's advisory committee, chaired by an engineering faculty member who is a full member of the graduate faculty. A degree plan must be filed, and toward this end, a student should specify a particular engineering career path and work with their advisory committee to identify the relevant coursework. It is expected that the degree plan will be filed during the first semester of study. A final exam can be waived by approval of the student’s advisory committee—typically when a project presentation is done in lieu of the final exam. It is expected that the subject matter of this program will encompass multiple departments, and hence, oversight of this program will be maintained at the college level (Office of Graduate Programs within Engineering Academic and Student Affairs).
Financial Implications:

TAMU has sufficient resources to initiate and maintain quality distance learning programs. Traditional funding sources and student fees ensure the excellence of electronically based courses and programs. Students who are enrolled in online courses within the college of engineering are charged distance education differential tuition of $540.00 per semester credit hour, which allows for the delivery of the course and ensures the quality of distance and distributed education programs of the University. In addition to the distance education differential tuition, there are traditional services that are a part of the university’s operations that contribute to the effective delivery of distance education. A list of all student fee and explanations can be found at http://sbs.tamu.edu/.

University: Request for Authorization

I recommend adoption of the following program:

“Having complied with all of the requirements of the Texas Higher Education Coordinating Board, Texas A&M University (University name) is hereby authorized to offer the Masters of Engineering in Engineering (Degree) program by distance education, electronic to individuals (online delivery) effective Spring 2015.

The Texas A&M University System Office of Academic Affairs finds that the program offering aforementioned is within the role and scope and capacity of the institution and will benefit students.

Texas A&M University (University name) certifies that the proposed distance delivery of the aforementioned program meets the criteria under Texas Administrative Code Chapter 4 Subchapter P regarding quality of the curriculum and courses; delivery of instruction; evaluation, training, supervision, and support of faculty; financial resources; and admission of and support services for students. The program is within the role and mission of the institution and in the Table of Programs. The institution will comply with the standards and criteria of the Commission on Colleges of the Southern Association of Colleges and Schools and will adhere to criteria outlined in Principles of Good Practice for Degree and Certificate Programs and Courses Offered Through Distance Education.”

Approval – University:

_____________________________  __________________________
University President:  Date
Print name of President

Authorization: System

Approval – Texas A&M University System:

_____________________________  __________________________
James R. Hallmark, Ph.D.  Date
Vice Chancellor for Academic Affairs
THE TEXAS A&M UNIVERSITY SYSTEM
DISTANCE EDUCATION PROGRAM PROPOSAL:
ELECTRONIC TO INDIVIDUALS (ONLINE) DELIVERY
(BACHELORS OR MASTERS PROGRAMS ONLY)

Directions: An institution shall use this form to propose an “existing” bachelor’s or master’s degree program they wish to be offered via electronic to individual (online) delivery.

This form must be completed and signed by the university president or chief academic officer.

Upon completion, attach the “Approval Form” and submit it to the A&M System Office of Academic Affairs at AA-AgendaItems@tamu.edu

Information: Contact the A&M System Office of Academic Affairs at 979-458-7421 (Irma Harper)

Administrative Information

1. Institution: Texas A&M University

2. Program to be Offered (Include CIP code): Masters of Engineering in Engineering (14.0101.00)

3. Online Program Description – The Masters of Engineering in Engineering is a 30 credit hour non-thesis degree that requires at least one major project as part of a class or internship. This degree program is currently offered on-campus, and the requirements and focus for the distance education program are to be identical to the on-campus program. This degree is intended for students who are seeking careers at the interface of traditional engineering disciplines and/or in new disciplines of engineering that are emerging. Hence, the precise coursework requirements are to be determined by the student’s advisory committee, chaired by an engineering faculty member who is a full member of the graduate faculty. A degree plan must be filed, and toward this end, a student should specify a particular engineering career path and work with their advisory committee to identify the relevant coursework. It is expected that the degree plan will be filed during the first semester of study. A final exam can be waived by approval of the student’s advisory committee—typically when a project presentation is done in lieu of the final exam. It is expected that the subject matter of this program will encompass multiple departments, and hence, oversight of this program will be maintained at the college level (Office of Graduate Programs within Engineering Academic and Student Affairs).

4. Administrative Unit – Engineering Academic and Student Affairs within the Dwight Look College of Engineering

5. Proposed Implementation Date – Spring 2015
6. **Contact Person** – Provide contact information for the person who can answer specific questions about the program.

   Name: John Criscione  
   Title: Assistant Dean for Graduate Programs, Dwight Look College of Engineering  
   E-mail: jccriscone@tamu.edu  
   Phone: 979.845.5428
Format for Existing Bachelors or Masters Degree Program Electronic to Individual (Online Delivery) Request

**Step One:** For each of the following questions, include the requested information:

- What previously approved programs does your university offer, that are closely related to the new program and how are they related?

  The Dwight Look College of Engineering at Texas A&M University offers a variety of Masters of Engineering degree programs:
  - Aerospace Engineering
  - Biological & Agricultural Engineering
  - Biomedical Engineering
  - Chemical Engineering
  - Civil Engineering
  - Computer Engineering
  - Electrical Engineering
  - Industrial Engineering
  - Materials Science & Engineering
  - Mechanical Engineering
  - Nuclear Engineering
  - Ocean Engineering
  - Petroleum Engineering

  All of these programs are related as they are professional degrees that are practice-oriented for industry applications and ventures.

- (List the programs within your college/department that are already approved for online delivery.)

  - Masters of Science in Engineering Systems Management
  - Masters of Engineering in Industrial Engineering
  - Masters of Engineering in Petroleum Engineering
  - Masters of Engineering in Mechanical Engineering (*currently pending approval*)
  - Masters of Industrial Distribution
  - Masters of Science in Safety Engineering

- Will significant additional equipment or facilities be needed? If yes, explain.

  Texas A&M University and the college of engineering and have a robust and stable infrastructure to design, develop, and deliver distance courses. These resources include software as well as facilities to design and develop quality distance education content. Physical resources within the college include small studios to record and edit lectures, classrooms with lecture capture and videoconferencing (TTVN) capabilities, and interactive video/webinar rooms. At the university level, KAMU studios can be used to produce high quality videos.
TAMU libraries have podcast rooms available for faculty use. In addition, Instructional Technology Services provides and supports Blackboard Learn, the learning management system, and they host a variety of training events on Blackboard as well as other instructional technology software packages. Academic technology staff within the college of engineering will also work with faculty to provide additional and just-in-time training and assistance to use these facilities and software packages.

- Will significant additional financial resources be needed? If yes, explain.

TAMU has sufficient resources to initiate and maintain quality distance learning programs. Traditional funding sources and student fees ensure the excellence of electronically based courses and programs. Students who are enrolled in online courses within the college of engineering are charged distance education differential tuition of $540.00 per semester credit hour, which allows for the delivery of the course and ensures the quality of distance and distributed education programs of the University. In addition to the distance education differential tuition, there are traditional services that are a part of the university's operations that contribute to the effective delivery of distance education. The library, for example, provides online access to electronic databases and interlibrary loan services. Texas A&M Computing and Information Services, in addition to maintaining servers and network, supports the course management system, student information system, university Web site, etc. that are essential resources for the operation of distance education programs. These units are funded through state appropriations and student fees. A list of all student fee and explanations can be found at http://sbs.tamu.edu/.

- Will a significant number of new courses be required? If yes, explain.

Courses that are currently offered within the face-to-face degree program will be designed and developed into a distance education modality through a partnership between the subject matter expert (faculty member) and the instructional design and development team. The face-to-face and distance education courses will have the same course goals and objectives. These courses will only differ in the delivery and teaching methodologies that have proven to be best practices in distance education courses. Students, regardless of the delivery mechanism will be held to the same standard for courses and the degree program.

- Will a significant number of new faculty members be required? If yes, explain.

Existing faculty will serve as the subject matter experts when designing and developing the courses with an instructional design team. The subject matter experts and additional currently existing graduate faculty within the college of engineering will serve as the instructors of record. As the program grows, additional faculty may be hired according to the graduate faculty standards set forth by the college of engineering.

- Will significant additional library/learning resources be needed? If yes, explain.
Library resources to be used within the distance education program currently exist via electronic means. Both face-to-face and distance education students will have access to the same resources and databases that will be required to complete the program. All students involved in the program will be subject to the library use fee, which is standard for all Texas A&M University students regardless of location. Program staff will assist these students as needed in acquiring necessary materials.

- What processes do you have in place that secures that a student registered for a distance education course is the same student who completes and receives credit for it? Explain.

Texas A&M University currently has distance education programs and demonstrates that the student who registers these programs or courses is the same student who participates in and completes the course or program and receives the credit. TAMU verifies the identity of students through a secure login and pass code available in the university learning management system (Blackboard Learn). TAMU offers approximately 30 programs, through the College of Agriculture & Life Sciences, College of Education & Human Development, Dwight Look College of Engineering, and College of Science, in which students can obtain 50 percent or more of the program via distance learning. These programs were approved by The Texas A&M University System as a part of a comprehensive institutional plan for distance education. All of these programs are currently enrolling students. Furthermore, the university offers fully on-line courses in a variety of disciplines. TAMU implemented Blackboard Learn as the learning management system in Spring 2012 to effectively manage these courses and to verify student participation in online courses.

TAMU primarily uses the secure login and password system in Blackboard Learn to verify the student identity. To access the course content maintained on the Blackboard Learn course management system, TAMU requires students to log in using a unique username and password. The password is initially set to a unique nine-digit number, which is communicated to students at the time of application and acceptance to the university. After the initial login, a student may change the default password. Furthermore, through this secure login and password, student activity performed in these courses is logged on the Blackboard server. Course instructors and system administrators can create reports showing users’ logon dates, frequency, content area access, tool usage, and assessment and assignment submissions.

In addition, Texas A&M University has several Standard Administrative Procedures (SAPs) and University Rules (URs) that address student authentication:

- SAP 29.02.03.M1.03 Information Resources – Account Management
- SAP 29.01.03.M1.14 Information Resources – Password-Based Authentication
- SAP 29.01.03.M1.09 Information Resources – Incident Management
- SAP 29.01.03.M1.27 Exclusion from Required Risk Mitigation Measures
- UR 29.01.03.M2 Rules for Responsible Computing
- UR 29.01.03.M1 Security of Electronic Information Resources
*Note: SACS requires that programs that are a significant departure from those offered when the institution was last evaluated be reported according to SACS. If the answers to these questions reflect a “significant departure” then SACS reporting is required.

**Step Two:** For each of the following questions, include the requested information:

1. **Program Administrative Oversight and Structure:**
   - Identify the person and office directly responsible for the overall management of the offering.
     - Name: John Criscione
     - Title: Assistant Dean for Graduate Programs, Dwight Look College of Engineering
     - E-mail: jccriscone@tamu.edu
     - Phone: 979.845.5428

2. **Faculty Resources:**
   - If the online program will result in additional students, how will faculty resources be provided, that is, hiring additional faculty, reallocating faculty resources from other programs, etc.?

   Existing faculty will serve as the subject matter experts when designing and developing the courses with an instructional design team. The subject matter experts and additional currently existing graduate faculty within the college of engineering will serve as the instructors of record. As the program grows, additional faculty may be hired according to the graduate faculty standards set forth by the college of engineering. The department and college will monitor the growth of the program to determine additional needs, if current faculty from other programs can be utilized to serve as subject matter experts and instructors of record, department will work together to share faculty appointments (when necessary). If additional faculty are warranted, the college of engineering will work with departments to hire qualified distance education faculty to develop and teach courses within the distance education masters program.

3. **Evaluation:**
   - How will your institution monitor the quality of the program and student learning outcomes?

   Course content creation, design, and development will be carried out as a partnership between the subject matter expert and the instructional design and development team. Quality standards will be established based on national standards to ensure the course is consistent with Texas A&M University standards for educational program development. Accessibility laws and guidelines will also be followed.

   Distance courses within the college of engineering will be evaluated and assessed within the academic program’s assessment and continuous improvement process. The continuous improvement process looks annually at the learning outcomes of the individual courses in the program. The program assessment takes place yearly with WEAVE online. A formal audit or review occurs every seven years by outside engineering experts and a final report is
sent to the TAMU Provost’s Office. The department and program coordinators will ensure that data are collected to represent the distant modality and are then fed into the assessment process and the improvements made thereafter.

- Describe procedures for evaluation of the program and its effectiveness in the first five years of the program, including admission and retention rates, program outcomes assessments, placement of graduates, changes of job market need/demand, ex-student/graduate surveys, or other procedures.

Engineering Academic and Student Affairs (EASA) within the college of engineering will collaborate with department to assess admission and retention rates for both the on-campus and distance education degree programs. In addition to the monitoring and assessment procedures mentioned above, the EASA will work with departments to assess program outcomes through an informal review process after the fourth year of the program. The department will be responsible for tracking the placement of students, changes within the job market/demand, and exit surveys of students of both the distance education and on-campus degree programs. The program will also be assessed by external reviewers every six to seven years as part of the academic review process.

- How would evaluations be carried out?
   The program evaluation will encompass performance of students, evaluations of the professors, and quality of program from the perspective of students, professors, and industry. Distance education students will be evaluated in comparison to students in face-to-face classrooms through grade distributions and test evaluations/assessments. Professors will be evaluated through the same evaluation tools used by the department for other courses. The program will be evaluated through a survey instrument provided to students both face-to-face and distance. This instrument will ask students to evaluate the quality of instruction they received through the course management system or face-to-face, to comment on their use of other media for communications, and to suggest ways to improve various facets of the course/program. Departmental faculty will monitor courses to evaluate teaching methods and effectiveness to suggest improvements and develop best practices in delivery techniques. Industry advisory boards will be asked to provide input regarding the programs, this feedback will be used to make appropriate changes in the degree and delivery of the program.

**Step Three:** Complete, sign and submit with proposal the “Texas Higher Education Coordinating Board Certification Form for Electronically Delivered Programs” on the following page.
Texas Higher Education Coordinating Board

Certification Form for Electronically Delivered and Off-Campus Education Programs

Based on Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically.

CURRICULUM AND INSTRUCTION

- Each program or course results in learning outcomes appropriate to the rigor and breadth of the degree or certificate awarded.
- A degree or certificate program or course offered electronically is coherent and complete.
- The program or course provides for appropriate interaction between faculty and student and among students.
- Qualified faculty provide appropriate oversight of the program or course that is offered electronically.
- Academic standards for all programs or courses offered electronically will be the same as those for programs or courses delivered by other means at the institution where the program or course originates.
- Student learning in programs or courses delivered electronically should be comparable to student learning in programs offered at the campus where the programs or courses originate.

INSTITUTIONAL CONTEXT AND COMMITMENT

Role and Mission
- The program or course is consistent with the institution’s role and mission.
- Review and approval processes ensure the appropriateness of the technology being used to meet the objectives of the program or course.

Students and Student Services
- Program or course announcements and electronic catalog entries provide appropriate information.
- Students shall be provided with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technological competence and skills, technical equipment requirements, availability of academic support services and financial aid resources, and costs and payment policies.
- Enrolled students have reasonable and adequate access to the range of student services and student rights appropriate to support their learning.
- The institution has admission/acceptance criteria in place to assess the extent to which a student has the background, knowledge and technical skills required to undertake the program or course.
- Advertising, recruiting, and admissions materials clearly and accurately represent the program or course and the services available.

Faculty Support
- The program or course provides faculty support services specifically related to teaching via an electronic system.
- The institution assures appropriate training for faculty who teach via the use of technology.
The institution provides adequate equipment, software, and communications access to faculty to support interaction with students, institutions, and other faculty.

**Resources for Learning**

- The institution ensures that appropriate learning resources are available to students.
- The institution evaluates the adequacy of, and the cost to students for, access to learning resources and documents the use of electronic resources.

**Commitment to Support**

- Policies for faculty evaluation include appropriate recognition of teaching and scholarly activities related to programs or courses offered electronically.
- The institution demonstrates a commitment to ongoing support, both financial and technical, and to continuation of the program or course for a period of time reasonable and sufficient for students to complete the course or program.

**EVALUATION AND ASSESSMENT**

- The institution evaluates the program's or course's educational effectiveness, including assessments of student learning outcomes, student retention, and student and faculty satisfaction.
- At the completion of the program or course, the institution provides for assessment and documentation of student achievement in each course.

On behalf of *Texas A&M University*, I assert that the preceding Coordinating Board criteria have been met for all courses and programs that will be delivered electronically and off-campus face-to-face.

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**Chief Academic Officer or President**

**Date**

**Name:**

**Title:**

**THECB 6/2010**
Texas A&M University
New Certificate, Bachelors, Masters, or Doctoral Program
- Proposal Checklist -

Requested by the Department or Unit of: Finance

Program Type, Level, Designation, Title, Description, Hours
Program Type Certificate Program ☐ Degree Program ☒
Program Level Undergrad Certificate ☐ Grad Certificate ☐ Bachelor ☐ Master ☒ Doctoral ☐
Degree Designation (i.e., BS, BA, MA, MS, MEng, Med, PhD, EdD, etc.) Master, MEd
Title of proposed program: Master of Financial Management
Proposed CIP Code (if known): 52.0304.00
Brief program description (provide a catalog description for undergraduate and graduate certificates):
The Master of Financial Management program is designed for students who are currently enrolled in an undergraduate program at Texas A&M University, and who have been admitted into a high-impact learning program at Mays Business School. The designation of "high-impact learning programs" for the purpose of eligibility to this Master's degree will be made by the Dean of Mays Business School. At the moment, two high-impact programs have been approved for this purpose: (i) the current Financial Management track of the Professional Program of Accounting (PPA) and (ii) the Trading Risk and Investments Program (TRIP) at Mays Business School. The program Master of Financial Management focuses on developing financial analytical skills and institutional knowledge and preparing students with strong training in accounting and finance for careers in CPA firms, corporations, financial institutions, investment firms, and commodity- or energy-based industries.

Minimum program semester credit hours (SCH) Certificates - 12 hours* Bachelors - 120 hours Masters - 30 hours
Proposed program hours: 36
*12 hours minimum to appear on transcript

Off-Campus or Distance Delivery
% of Program a student can take off-campus or through Distance Education Program Start Date SACS Approval** When Provost needs to inform SACS
☐ 25% □ 6 months before first day of program
☐ 50% □ Approval Required 6 months before first day of program
☐ 80% □ Approval Required 6 months before first day of program
☐ 100% □ Approval Required 6 months before first day of program
**Notification letter arranged through the Vice Provost for Academic Affairs and sent by TAMU President.

Program Delivery Mode
☐ On-campus College Station, TX
☐ Broadcast / TTVN
☐ Specific off-campus location***
☐ Distance Education / Internet In-State ☐ Out-of-State ☐ Start Date
☐ Out-of-Country Will this program be offered with another institution? Yes ☐ No ☒
If yes, contact the Vice Provost for Academic Affairs for additional reporting requirements.
***Is this an approved SACS location? Yes ☒ No ☐ If no, a program prospectus must be sent to SACS.
Approved locations as of September 2009: TAMU-Galveston, TAMU-Qatar, University Center-The Woodlands, Dubai (EMBA)

Program Funding
Has program funding been finalized at the department or college level? Yes ☒ No ☐
If no, explain or attach budget:

Will new costs for the first five years of the program be under $2 million? Yes ☒ No ☐
If new costs exceed $2 million, coordinating board approval is required.
Submitted by (Contact Person):

Sorin Sorescu

Name

Professor of Finance and Department Head

Title

ssorescu@tamu.edu

Email

979-458-0380

Phone

Certification Statement

By signing below, the Dean of the College certifies the proposed program complies with coordinating board standards. If the program is delivered through Distance Education, the Dean of the College certifies that they are following the Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically.

[Signature, Department Head or Interdisciplinary Program Chair]

Sorin Sorescu

Typed or Printed Name

Bale Shett

8/3/2014

Chair, College Review Committee

8/4/11

Dean of College

Additional Approvals Required: Faculty Senate and President.
Certification Form for New Bachelor's and Master's Programs
Texas Higher Education Coordinating Board

Directions: An institution shall use this form to request a new bachelor's or master's degree program that meets all criteria for automatic approval in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.44: (a) The program has institutional and governing board approval; (b) the program complies with the Standards for Bachelor's and Master's Programs; (c) adequate funds are available to cover the costs of the new program; (d) new costs during the first five years of the program will not exceed $2 million; (e) the program is a non-engineering program (i.e., not classified under CIP code 14); and (f) the program will be offered by a university or health-related institution.

If a new bachelor's or master's program does not meet the criteria above, an institution must submit a request using the Form for Requesting a New Bachelor's and Master's Degree Program.

Information: Contact the Division of Academic Affairs and Research at 512/427-6200 for more information.

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Administrative Information

1. Institution: Texas A&M University

2. Program Name: Master of Financial Management

3. Proposed CIP Code: 52.0304.00

4. Number of Required Semester Credit Hours (SCHs): 36

5. Administrative Unit: The Department of Finance at Mays Business School

6. Delivery Mode: on-campus face-to-face

7. Implementation Date: Fall 2015

8. Contact Person: Provide contact information for the person who can answer specific questions about the program.

   Name: Sorin Sorescu
   Title: Professor of Finance and Head of the Department
   E-mail: ssorescu@mays.tamu.edu
   Phone: 979.458.0380

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AAR

Updated 9.9.09
Signature Page

I hereby certify that all of the following criteria have been met in accordance with the procedures outlined in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.44:

(a) The program has institutional approval.

(b) The program complies with the Standards for Bachelor's and Master's Programs.

(c) Adequate funds are available to cover the costs of the new program.

(d) New costs during the first five years of the program will not exceed $2 million.

(e) The program is a non-engineering program (i.e., not classified under CIP code 14).

(f) The program will be offered by a university or health-related institution.

I understand that the Coordinating Board will update the program inventory for the institution if no objections to the proposed program are received during the 30-day public comment period.

........................................................................................................
Chief Executive Officer                                      Date

........................................................................................................
I hereby certify that the Board of Regents has approved this program.

Date of Board of Regents approval: ...........................................

........................................................................................................
Board of Regents (or Designee)                                      Date
New Program Request
Master of Financial Management

Program Information

Overview

The Department of Finance is proposing to divide the current MS-Finance Degree into two separate degrees, for the purpose of better aligning the degrees we offer with the requirements of the market place and with the career objectives of our students. To accomplish this purpose, the Department would like to create the degree of Master of Financial Management (MFM). The new MFM degree would be accessible only to current undergraduate students at Texas A&M University who have been admitted to a high-impact learning program at Mays Business School. The designation of high-impact program is made periodically by the Dean of Mays Business School. At the moment, the Professional Program in Accounting (PPA) and the Trading, Risk & Investments Program (TRIP) meet this criteria, and only students admitted to these programs would be eligible to apply for admission to the MFM.

The justification for dividing the MS Finance Degree into two separate degrees is as follows:

- The background of graduate students in PPA and TRIP is different from those in the rest of the MS-Finance program. Currently, all graduate students in PPA and TRIP come from the ranks of Mays undergraduate students. By contrast, the new MS-Finance program (after the proposed separation) will be targeted to students with non-business undergraduate education, primarily from the STEM disciplines, and would be open to world-wide applicants. Without the proposed split, the department would have to use the same degree title (MS-Finance) to provide graduate education to two very different student segments with different pedagogical needs, different degree plans, and different career opportunities.
- After consultation with the leaders of PPA and TRIP, the Department determined that the degree of Master of Financial Management is a more appropriate title for PPA and TRIP students, given the professional, targeted nature of these two programs. By contrast, the degree of Master of Science in Finance is intended as a more general graduate degree in Finance, with a much broader range of career opportunities.
- Therefore, by creating the new MFM degree, the Department will be able to better market the MS-Finance program to its specific market segment, while continuing to serve the educational needs of PPA and TRIP under the new, MFM degree title. We expect that this targeted marketing will increase overall enrollment into all of our graduate programs.

In sum, this request is only for the creation of a new degree title and does not have any cost implications. The new degree title will be used to separate the PPA and TRIP track from the rest of the MS Finance program.

I. Need

A. Job Market.

1. PPA

The proposed MFM degree will be accessible to students in the Financial Management Track of the five-year BBA-Accounting/MS combination known as the Professional Program of Accounting, or PPA, at Mays Business School. Currently, PPA students receive both a Bachelor of Business Administration degree (BBA) with a major in Accounting and a Master of Science degree (MS) in Finance when they graduate at the end of the five-year program. After the change, the students enrolled in the Financial Management track of PPA will receive an MFM degree instead of an MS degree. This change will allow the Department of Finance to re-target the MS program to other students, primarily from STEM (science, technology, engineering, and mathematics) disciplines for the purpose of increasing graduate enrollment in the department.
PPA has an excellent placement rate: more than 95% have accepted jobs before graduation and virtually all students have accepted jobs at graduation. Moreover, more than 85% of the graduates have joined international accounting firms or major corporations, and most students pass the CPA exam at or shortly after graduation.

(2) TRIP

The proposed MFM degree will also be accessible to students in the Trading, Risk & Investments Program (TRIP) administered in the Department of Finance. TRIP, now in its fifth year, has placed 100% of its graduates in jobs of their first choice as finance professionals. The program’s Industry Advisory Board, comprising 40 leading energy and financial services firms, has unanimously encouraged the creation of the MFM degree, both to increase its size and offer successful graduates a master’s degree, analogous to the five-year BBA-Accounting/MS combination known as PPA. The MFM degree will also be used to attract A&M students from Engineering and other STEM colleges to the TRIP at Mays.

B. Student Demand.

(1) PPA

Between 1996 and 2014, the enrollment in the Financial Management track of PPA increased from 15 to 80, with an enrollment cap currently limited to 80 PPA students per year. Currently the finance track represents the largest group in the PPA program.

(2) TRIP

The Graduate Management Admissions Council reports that 57% of specialized master’s programs in finance reported increased application volume for their incoming 2012-13 classes, and that 78% of them expect to increase target class size. Within our department, 70% of TRIP students on average apply for the current MS-Finance program. During advising, TRIP students express almost unanimous interest in a joint BBA/Master’s program. It is anticipated that the joint program can be completed in approximately 5½ years.

C. Enrollment Projections.

(1) PPA

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(2) TRIP

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II. Quality.

A. Degree Requirements.
New Program Request  
Master of Financial Management

(1) PPA

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<td><strong>Total</strong></td>
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(2) TRIP

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Required FINC Courses</td>
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<tr>
<td>Prescribed FINC Electives</td>
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<tr>
<td>Approved Electives</td>
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<td><strong>Total</strong></td>
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B. Curriculum.

(1) PPA

<table>
<thead>
<tr>
<th>Required FINC Courses</th>
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<tbody>
<tr>
<td>FINC629  Financial Management I</td>
<td>3</td>
</tr>
<tr>
<td>FINC632  Investment Management</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Required ACCT Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT628  Business Application Modeling</td>
<td>3</td>
</tr>
<tr>
<td>ACCT647  Financial Statement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ACCT650  Accounting Ethics</td>
<td>3</td>
</tr>
<tr>
<td>ACCT651  Development of Accounting Thought</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Prescribed FINC Electives (student chooses 12 hours)  

| FINC630  Financial Management II | 3   |
| FINC642  Analysis of Money & Capital Markets | 3   |
| FINC645  International Finance    | 3   |
| FINC643  Commercial Bank Management | 3   |
| FINC649  Financial Modeling      | 3   |
| FINC663  Trading and Markets     | 3   |
| FINC664  Active Portfolio Management | 3   |
| FINC665  Derivatives             | 3   |
| FINC666*  Wall Street, Investment Banking, & Financial Markets | 3 |
| FINC667  Commodity Trade Strategy | 3 |
| FINC668*  Applied Investment Analysis | 3 |
| FINC669*  Titans of Investing    | 3   |
| FINC670  Real Property Analysis  | 3   |
New Program Request
Master of Financial Management

FINC672  Real Property Finance  3
FINC673  Real Estate Valuation  3
FINC676  Commercial Real Estate Law  3
FINC677  Real Estate Development Analysis  3

Approved Accounting Electives (student chooses 6 hours)  SCH
ACCT621  Corporate Taxation  3
ACCT646  International Accounting  3
ACCT680  Tax Research  3
ACCT684  Professional Internship  3

(2) TRIP

Required FINC Courses  SCH
FINC629  Financial Management I  3
FINC632  Investment Management  3
FINC642  Analysis of Money & Capital Markets  3
Total  9

Prescribed FINC Electives (student chooses 15 hours)  SCH
FINC645  International Finance  3
FINC647  Financial Statement Analysis  3
FINC649  Financial Modeling  3
FINC660  Fixed Income Analysis  3
FINC661  Trading Risk Management  3
FINC663  Trading and Markets  3
FINC664  Active Portfolio Management  3
FINC665  Derivatives  3
FINC666*  Wall Street, Investment Banking, & Financial Markets  3
FINC667  Commodity Trade Strategy  3
FINC668*  Applied Investment Analysis  3
FINC669*  Titans of Investing  3
FINC684  Professional Internship  3

Approved Non-FINC Electives (student chooses 6 hours)  SCH
ACCT650  Accounting Ethics  3
AGEC601  Commodity Futures and Options Markets  3
ECMT660  Mathematical Economics I  3
ECMT680  Financial Econometrics  3
ECON659  Behavioral Game Theory  3
INFO636  Decision Support Systems  3
INFO658  Business Computer Models and Simulation  3
MGMT602  Markets and Public Policy  3
MGMT639  Negotiations in Competitive Environments  3
MGMT680  Business and Corporate Strategy  3
MATH628  Mathematics of Finance  3
PSAA622  Public Finance  3
PSAA647  Risk and Public Policy  3

Note: Courses indicated with an asterisk (*) require instructor approval.
### C. Faculty.

<table>
<thead>
<tr>
<th>Finance Faculty Name and Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses Assigned In MFM</th>
<th>% Time Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. Timothy Dye Clinical Professor</td>
<td>Ph.D. Texas A&amp;M University</td>
<td>FINC629</td>
<td>50%</td>
</tr>
<tr>
<td>Julian E. Gaspar Clinical Professor</td>
<td>Ph.D. Georgetown University</td>
<td>FINC645</td>
<td>50%</td>
</tr>
<tr>
<td>Detlef Hallermann Clinical Associate Prof.</td>
<td>Ph.D. Colorado School of Mines</td>
<td>FINC661; FINC665; FINC685</td>
<td>50%</td>
</tr>
<tr>
<td>Hwangyun Kim Assistant Professor</td>
<td>Ph.D. University of Chicago</td>
<td>FINC660</td>
<td>17%</td>
</tr>
<tr>
<td>L. R. Martindale Senior Lecturer MFM Program Director</td>
<td>J.D. S. Texas College of Law</td>
<td>FINC642; FINC684</td>
<td>60%</td>
</tr>
<tr>
<td>Sorin Sorescu Professor</td>
<td>Ph.D. University of Florida</td>
<td>FINC666</td>
<td>10%</td>
</tr>
<tr>
<td>W. Jene Tebeaux Executive Professor</td>
<td>CFA, M.B.A. University of Houston</td>
<td>FINC668</td>
<td>17%</td>
</tr>
<tr>
<td>Britt Harris Executive Professor</td>
<td>B.A. Texas A&amp;M University</td>
<td>FINC669</td>
<td>17%</td>
</tr>
<tr>
<td>Kevin Moore Executive Professor</td>
<td>M.S. Johns Hopkins</td>
<td>FINC689; FINC663</td>
<td>33%</td>
</tr>
<tr>
<td>Yan Liu Assistant Professor</td>
<td>Ph.D. Duke University</td>
<td>FINC632</td>
<td>50%</td>
</tr>
<tr>
<td>Yong Chen Associate Professor</td>
<td>Ph.D. Boston College</td>
<td>FINC689</td>
<td>33%</td>
</tr>
<tr>
<td>Marco Rossi Visiting Assistant Professor</td>
<td>Ph.D. Pennsylvania State University</td>
<td>FINC665</td>
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</tr>
<tr>
<td>Adam Kolasinski Associate Professor</td>
<td>Ph.D. Massachusetts Institute of Technology</td>
<td>FINC689</td>
<td>33%</td>
</tr>
<tr>
<td>Johnson, Will Visiting Assistant Professor</td>
<td>Ph.D. Florida Atlantic University</td>
<td>FINC644; FINC689</td>
<td>50%</td>
</tr>
<tr>
<td>Shane Johnson</td>
<td>Ph.D.</td>
<td>FINC689</td>
<td>17%</td>
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</table>
New Program Request  
Master of Financial Management

<table>
<thead>
<tr>
<th>Professor</th>
<th>Louisiana State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles Gilliland</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Clinical Professor</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>Tom Jackson</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Clinical Associate Professor</td>
<td>FINC674; FINC673</td>
</tr>
<tr>
<td>Rus Peterson</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>Cydney Donnell</td>
<td>M.B.A.</td>
</tr>
<tr>
<td>Executive Professor</td>
<td>Southern Methodist University</td>
</tr>
<tr>
<td>Ed Elmore</td>
<td>J.D.</td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td>University of Texas</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Accounting Faculty Name and Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses Assigned In MFM</th>
<th>% Time Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anwer S. Ahmed</td>
<td>Ph.D</td>
<td>ACCT651</td>
<td>20%</td>
</tr>
<tr>
<td>Professor</td>
<td>University of Rochester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April Nafstad</td>
<td>CPA, M.S.</td>
<td>ACCT646</td>
<td>20%</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Texas A&amp;M University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dennis R. Lassila</td>
<td>Ph.D</td>
<td>ACCT621</td>
<td>20%</td>
</tr>
<tr>
<td>Professor</td>
<td>University of Minnesota</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adam J. Myers III</td>
<td>J.D.</td>
<td>ACCT650</td>
<td>20%</td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td>Harvard Law School</td>
<td></td>
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</tr>
<tr>
<td>Joan Sanders</td>
<td>M.S.</td>
<td>ACCT646</td>
<td>20%</td>
</tr>
<tr>
<td>Senior Lecturer, Associate Director of PPA</td>
<td>Texas A&amp;M University</td>
<td></td>
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</tr>
<tr>
<td>Michael Shaub</td>
<td>Ph.D</td>
<td>ACCT650</td>
<td>20%</td>
</tr>
<tr>
<td>Clinical Professor</td>
<td>Texas Tech University</td>
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</tr>
<tr>
<td>Connie Weaver</td>
<td>Ph.D</td>
<td>ACCT621</td>
<td>20%</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Arizona State University</td>
<td></td>
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</tr>
<tr>
<td>Senyo Yawo Yse</td>
<td>Ph.D</td>
<td>ACCT647</td>
<td>20%</td>
</tr>
<tr>
<td>Professor</td>
<td>UC - Berkeley</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C. Impact on Other Programs.

No impact on other programs is expected.

D. Students.

The MFM program is currently open to undergraduate accounting majors admitted to the PPA, and to undergraduate A&M majors from Mays or STEM colleges admitted to TRIP. Applications to the MFM program are accepted only through the PPA and TRIP.

The program will be managed by a faculty member in the Department of Finance who will serve as a Program Director.

(1) PPA

Applications through PPA must be made during the fall and spring semesters of a student's junior year. Admission is based on an evaluation of prior academic performance, potential for performance in graduate school, and honors, awards and extracurricular activities.

PPA at Texas A&M University was launched in 1992 and has attracted excellent students (average GPR at admission is approximately 3.6). Since its inception, over 98% of the graduates have secured full-time employment before graduation.

Student advising is provided by the PPA office.

(2) TRIP

Applications through TRIP must be made during the student’s junior year. For undergraduate Finance majors at Mays Business School, applications are accepted and encouraged during the student’s sophomore year. To be eligible to apply for TRIP, students must be either Finance majors or Business Honors/Finance at Mays Business School, or enrolled in one of the STEM programs at Texas A&M University. TRIP is a high-impact learning program to which students apply competitively. Applicants are ranked according to essays, interviews, recommendations, and academics. The successful applicant typically ranks in the top third of all applicants. The successful TRIP student completes and presents three major projects, based respectively on a first-year shadowing experience with an industry representative and two different paid internships with firms on the advisory board. Each student must participate in at least one recognized trading competition, and at least one week-long industry field trip.

The Department dedicates an advisor to TRIP, with whom each student is required to meet once per semester. The program markets itself actively to traditionally underrepresented students.

E. Library and Other Resources.
New Program Request
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The West Campus Library maintains a full inventory of the recognized academic and trade journals in finance. Students also have full access to Bloomberg®, a preeminent financial news and research service.

F. Facilities and Equipment.

No changes in existing facilities or equipment are necessary.

G. Accreditation.

All Mays Business School programs are accredited by AACSB International.

III. Costs and Funding.

<table>
<thead>
<tr>
<th>Five-Year Costs</th>
<th>Five-Year Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel (Allocated Faculty)</td>
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<tr>
<td>Facilities and Equipment</td>
<td>$0</td>
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<tr>
<td>Libraries, Supplies, and Materials</td>
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<tr>
<td>Other</td>
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<td>Total Costs</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Total Funding</td>
</tr>
</tbody>
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There are no incremental costs associated with the new MFM degree because it is a spinoff of the existing MS Finance degree.

IV. Program Review.

All Mays programs have established learning outcomes. These outcomes are assessed on a continuing basis. The courses included in the Financial Management track of PPA and TRIP are already included in the current assessment process. Learning outcomes will be developed and assessed for the new version of the MS-FINC Degree.