Memorandum

November 11, 2013

To: Executive Committee
    Faculty Senate

From: Valerie Balester, Chair
       W and C Course Advisory Committee

RE: Request for course additions to the W/C Course graduation requirement

The W and C Course Advisory Committee voted to approve the following courses. The W and C Course Advisory Committee reviewed each course and agreed that all aspects of the courses were consistent with guidelines for the W or C Course status requirement. Therefore, these courses should be included in the “W Designated Course” or “C Designated Course” category to meet the writing/communication requirement for graduation.

Courses submitted for W recertification:

   a. ALED 440       Leading Change
   b. BIMS 491       Research

Courses submitted for C recertification:

   a. ANSC 406       Beef Cattle Production and Management
   b. ENTC 422       Manufacturing and Mechanical Engineering Technology Projects
TO: Faculty Senate Executive Committee
FROM: Valerie Balester, Chair, W and C Course Advisory Committee
CC: Landry Lockett, Department of Ag. Leadership, Education, & Communications
     Jack Elliot, Head, Department of Ag. Leadership, Education, & Communication
     Kim Dooley, AOC Dean, College of Agriculture and Life Sciences
DATE: November 11, 2013
SUBJECT: REPORT ON RECERTIFICATION OF W COURSE: ALED 440

We recommend that ALED 440 Leading Change be certified as a writing (W) course for four academic years (1/14 to 1/18). We have reviewed a representative syllabus and have determined that the course meets or exceeds the following criteria:

1. Percentage of final grade based on writing quality: 40%
2. Course content appropriate to the major
3. Total number of words: 2000
4. Instructor to student ratio for one section: 1:25

Two Graduate Assistant Teachers and an instructor work together in this course. Students write two reports on change and innovation. All assignments are submitted as drafts and get feedback from the instructors. Lecture, modeling, workshops, and discussion are used as methods of instruction.

No significant changes have been made since original certification was granted.
TEXAS A&M UNIVERSITY W & C COURSE ADVISORY COMMITTEE
Request for W or C Course Status
Submitted to the Chair, W & C Course Advisory Committee
University Writing Center, MS 5000

1. This request is submitted to Valerie Balester, Chair, W & C Course Advisory Committee, and concerns [enter prefix, number, and complete course title]:

ALED 440, Leading Change

2. Have this form signed by both the department head and the college dean. Provide a copy of the syllabus to the college dean.

3. Once signed, please submit this form to the University Writing Center, MS 5000.

Instructor / Coordinator: Dr. Landry Lockett
Printed name and signature: [Signature]
(10/22/13)

Received: Valerie Balester
(W and C Course Coordinator, University Writing Center)
11/4/13

Approvals:

College Dean: Kim Dooley
Printed name and signature: [Signature]
(10/22/13)

Department Head: Dr. Jack Elliot
Printed name and signature: [Signature]
(10/22/13)
Leading Change  
ALED 440, section 901; Fall 2013

Agricultural Leadership, Education, and Communications

COURSE INSTRUCTOR:  
Dr. Landry L. Lockett  
Senior Lecturer  
Room 273, AGLS Building  
l-lockett@tamu.edu, 979.458.7991

OFFICE HOURS: Open door policy; however, the best thing to do is setup an appointment online by going to our Departmental website (alec.tamu.edu) and clicking on the first link found under the scrolling pictures on the homepage. If you are unable to setup an appointment through this system, please contact Ms. Charlene Boggus at 979.862.3001.

TEACHING ASSISTANT:  
Travis Irby  
travisirby@tamu.edu  
Room 228, AGLS Building  
Office hours by appointment

Change is the law of life and those who look only to the past or present are certain to miss the future. ~ John F. Kennedy

CLASS MEETINGS:  
ALED 440 Section 901  
TR 12:45 p.m. – 2:00 p.m.  
Classroom: AGLS 115

*Selected readings will be also be provided in class and on the course eCampus website.

NATURE OF COURSE:  
ALED 440 is designed to foster your competence in leading change; including awareness of change models, change theory, communicating effectively, critical thinking, and how to lead change effectively (personal, organizational, societal). The course will also provide you the opportunity to apply such competencies to your personal experiences occurring presently and those yet to occur.

COURSE OBJECTIVES:  
Upon completion of the course, the student will be able to:  
• List and apply principles of planned change
• Identify methods of change in contexts: personal, social, business, political, etc.
• Influence the introduction, adoption, and diffusion of technological strategies
• Describe ways of predicting and minimizing undesirable consequences of change
• Enhance communications skills for change facilitation
LEARNING PROCESS:
Our course is designed to provide an opportunity for you to strengthen your understanding of leading change. All of you are accomplished learners; that is what got you to Texas A&M University. It is my goal to challenge you to not only learn and study the information presented, but to synthesize that information in ways to apply it to your own lives for practical use. In order to do so, I hope to develop a partnership where we work to accomplish the objectives mentioned above in an exciting and practical way. In order to reach our goals, YOU need to:

Attend class
- Take notes
- Participate in activities and discussions
- Take pride in the work you produce

In return, to reach our goals, I will:
- Prepare organized and practical seminar information
- Provide opportunities for discussion and interaction
- Plan fun and unusual learning experiences
- Be available for guidance and visitation

GRADING RUBRIC*

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points</th>
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<tbody>
<tr>
<td>Change Report**</td>
<td>200</td>
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<tr>
<td>Innovation Report**</td>
<td>200</td>
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<tr>
<td><strong>Exams</strong></td>
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<tr>
<td>2 @ 100 points each</td>
<td>200</td>
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<tr>
<td><strong>In-Class Activities (4 @ 75 points each)</strong></td>
<td>300</td>
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<tr>
<td>Attendance/Participation</td>
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<tr>
<td>Every In-class Day is Worth 4 Points</td>
<td>100</td>
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<tr>
<td><strong>Total Points</strong></td>
<td>1,000</td>
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</table>

COURSE GRADE:
900 - 1000 points = A
800 - 899 points = B
700 - 799 points = C
600 - 699 points = D
599 or below = F

*You may view your grades at any time on eCampus.*

**Students must have a passing grade for the writing component of this course in order to pass this course.
GRADING STANDARDS:

Students must have a passing grade for the writing component of this course in order to pass this course.

Leadership is often a topic of interest to students and many of assignments are of a personal nature. Therefore, it is easy to think of a leadership course as an “easy course” or an “easy A.” In reality, the personal nature of leadership requires intellectual curiosity and depth of thought not always found in other courses. The following standards should be kept in mind as you complete each course assignment.

“A” Work  Follows the assigned format and is extremely well-written, well-organized, and well-argued; demonstrates effective originality, challenging level of academic/intellectual difficulty and depth of thought/application of subject matter; contains no major inaccuracies or contradictions, few or no typos or errors in spelling, grammar, or mechanics.

“B” Work  Follows the assigned format and is generally well-written, well-organized and well-argued; demonstrates ample originality, academic/intellectual difficulty and a general understanding of subject matter; lacks some originality or depth of thought found in “A” work; contains few typos or errors in spelling, grammar, or mechanics.

“C” Work  Fulfills the basic requirements of college-level work; fair writing quality and effectiveness; demonstrates an adequate understanding of subject matter; contains a number of typos or errors in spelling, grammar, or mechanics.

“D” Work  Contains significant weaknesses and is too broad, too narrow, to vague, or too simplistic for college-level work; contains frequent typos or errors in spelling, grammar, or mechanics.

“F” Work  Fails to meet basic requirements of and is too simplistic for college-level work.

*This information on grading standards was developed by Dr. Lori Moore. I like it so much that I have included it here, and I will strive to accurately enforce these standards.

ASSIGNMENTS:

Change Report (1,000 words) – 200 points

Your task is to identify a past, current, or future example of personal change (something that you want and/or need to do) and write a concise report describing the significance of that change by answering the following: 1) description of the change; 2) the audience; 3) leadership strategies/change models used or planned to be used to implement the change; 4) your personal reaction/reflection if it was a change in the past, or if it is a future event identify and describe anticipated roadblocks and opportunities. You must cite and reference at least four legitimate sources for information found within your paper.

Innovation Report (1,000 words) – 200 points

Studying the diffusion of innovations is an important part of understanding change. Your task is to search for an article about an innovation and create report about the innovation related to content we have discussed in class. The innovation CANNOT be an Apple product.

This article must have been published in the popular press (Wall Street Journal, Discover magazine, USA Today, Fast Company, Bryan/College Station Eagle, TAMU Battalion, Dallas Morning News, FoxNews.com, etc. You will: 1) briefly explain the innovation; 2) evaluate the innovation using the various aspects of Roger’s Diffusion of Innovations that we have covered in class and through the summary reading that is posted on eCampus.* You must cite and reference at least four legitimate sources for information found within your paper.
*Further explanation of expectations (written or verbal) will be made during class meetings and posted on eCampus. Reports will be submitted/re-submitted on eCampus.

**REVISION POLICY:**
Students may opt to revise the two major writing assignments. Revised papers will be re-graded and will count as one-third of the grade on the major assignment. The original paper will count 60%. For example, a student's original paper received a 75. They revised the paper and got an 85. Their final grade for the assignment will be 79 (75*.60=45; 85*.40=34; 45+34=79).

**LATE ASSIGNMENTS:** All assignments are due by the date listed in the course outline unless otherwise noted. Assignment deadlines are strictly enforced. The ONLY reason late assignments will be accepted without penalty is following an excused absence (see the student rule handbook for a complete description), students may turn in late work according to the university policy "student rules". Otherwise 10% of the total possible points for any assignment turned in late will be deducted for every weekday it is late and will not be accepted for submission if it is more than one week late. Furthermore; if you turn in one of the two major writing assignments late without a University excused absence, you will not be allowed to resubmit a revised version for increased points.

**IN-CLASS ACTIVITIES (4 @ 75 points each):**
There are four in-class activities that are scheduled for this semester. Only students with university excused absences will be allowed to make up these activities.

**ASSESSMENTS:**
Exams – 200 points total
You will be evaluated on your comprehension of the course texts, and lecture information. Exams will be conducted in class on the dates specified in the course schedule. You will need a scantron sheet for each exam.

**ATTENDANCE / PARTICIPATION: 100 points**
Attendance is required, and it will be taken each class session. You must be in class ON TIME and stay for the duration of the class meeting in order to meet attendance requirements. If you are late and miss the sign-in sheet, you will be counted absent. For all excused absences, provide the proper documentation and make the appropriate arrangements. For more information on attendance, see http://student-rules.tamu.edu/rule07.

**ALED 440-901; Fall 2013: Course Schedule (Subject to Change)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings &amp; Assignments Due</th>
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</thead>
<tbody>
<tr>
<td>8/27</td>
<td>Welcome and Introduction</td>
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<tr>
<td>8/29</td>
<td>Why Change?</td>
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<tr>
<td>9/3</td>
<td>Tips for Success in a Writing Intensive Course</td>
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<td>9/5</td>
<td>Tipping Point Leadership</td>
<td>Tipping Point Article</td>
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<td>9/10</td>
<td>8 Stages for Creating Change (Kotter)</td>
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<td></td>
<td>Lewin's Three-Step Model</td>
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<tr>
<td>9/12</td>
<td>Development and Change</td>
<td>Van De Ven &amp; Poole Article</td>
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<tr>
<td>9/17</td>
<td>Development and Change Continued</td>
<td>Activity #1</td>
</tr>
<tr>
<td>9/19</td>
<td>Writing Lab ~ Optional attendance</td>
<td>Change Paper due by Midnight</td>
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<tr>
<td>9/24</td>
<td>Elements of Diffusion</td>
<td>Diffusion of Innovations Summary pp. 1-3</td>
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<td></td>
<td>Innovation Decision Process</td>
<td>Diffusion Summary pp. 5-6</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Notes</td>
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<tr>
<td>9/26</td>
<td>Characteristics of Innovations</td>
<td>Diffusion Summary pp. 6-7</td>
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<tr>
<td>10/1</td>
<td>Adopter Categories</td>
<td>Diffusion Summary pp. 8-9</td>
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<tr>
<td>10/3</td>
<td>In-class Exam 1</td>
<td>In-class Exam 1</td>
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<tr>
<td>10/8</td>
<td>Writing Lab – Optional attendance</td>
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<td>10/10</td>
<td>Diffusion Networks / Opinion Leaders Change Agents</td>
<td>Diffusion Summary pp. 9-11</td>
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<td>Diffusion Summary pp. 11-12</td>
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<td></td>
<td></td>
<td>Change Paper Revisions due by Midnight</td>
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<tr>
<td>10/15</td>
<td>Writing Lab – Optional attendance</td>
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<tr>
<td>10/17</td>
<td>Innovation in Organizations</td>
<td>Diffusion Summary pp. 12-13</td>
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<td>The Innovation Mindset in Action</td>
<td>3M Corporation Article</td>
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<td>Innovation Paper due by Midnight</td>
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<tr>
<td>10/22</td>
<td>In-Class Innovative Mindset Activity</td>
<td>Activity #2</td>
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<tr>
<td>10/24</td>
<td>Change has Consequences</td>
<td>Diffusion Summary pp. 13-14</td>
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<td>Forced Change</td>
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<tr>
<td>10/29</td>
<td>Three Surprises About Change</td>
<td>Switch pp. 1-26</td>
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<td>10/31</td>
<td>Personal Change – The Rider</td>
<td>Switch pp. 27-100</td>
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<td>11/5</td>
<td>Directing the Rider</td>
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<td>11/7</td>
<td>Personal Change – The Elephant</td>
<td>Switch pp. 101-178</td>
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<td>11/12</td>
<td>Motivating the Elephant</td>
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<td>11/14</td>
<td>Personal Change – The Path</td>
<td>Switch pp. 179-249</td>
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<td></td>
<td>Innovation Paper Revisions due by Midnight</td>
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<tr>
<td>11/19</td>
<td>Shaping the Path</td>
<td>Activity #3</td>
</tr>
<tr>
<td>11/21</td>
<td>Keep the Change Going</td>
<td>Switch pp. 250-258</td>
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<tr>
<td>11/26</td>
<td>Culture and its Effect on Change</td>
<td>Activity #4</td>
</tr>
<tr>
<td>11/28</td>
<td>Thanksgiving Holiday – No Class</td>
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<tr>
<td>12/3</td>
<td>In-Class Exam 2</td>
<td>In-Class Exam 2</td>
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<tr>
<td></td>
<td>No Final Exam</td>
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</tbody>
</table>

The University Writing Center (UWC), located in Evans Library 1.214, is a resource for undergraduate students who want consultation at any stage of the writing process and for faculty who want assistance in teaching writing. They offer help to writers at any stage of the writing process including brainstorming, researching, drafting, documenting, revising, and more. Their service for students features face-to-face and on-line consultations. If you visit the UWC, take a copy of your writing assignment, a hard copy of your draft or any notes you may have, as well as any material you need help with. To find out more about the UWC, visit the web page at uwc.tamu.edu, call 458-1455, or stop by their office in Evans Library.

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, the legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.

The Aggie Honor Code is important to all Aggies. **Aggies do not LIE, CHEAT, or STEAL, nor do they tolerate those who do.**

This includes PLAGARIZING anyone else's work. You are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. If you have questions regarding plagiarism, please consult the Texas A&M University Honor Council Rules and Procedures on the web at http://www.tamu.edu/aggiehonor and the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty.”
TO: Faculty Senate Executive Committee
FROM: Valerie Balester, Chair, W and C Course Advisory Committee
CC: Elizabeth Crouch, Director, Biomedical Science Program
     F.H. "Skip" Landis, AOC Dean, College of Veterinary Medicine
DATE: November 11, 2013
SUBJECT: REPORT ON RECERTIFICATION OF W COURSE: BIMS 491

We recommend that BIMS 491 Research be certified as a writing (W) course for four academic years (9/14 to 9/18). We have reviewed a representative syllabus and have determined that the course meets or exceeds the following criteria:

1. Percentage of final grade based on writing quality: 70%
2. Course content appropriate to the major
3. Total number of words: 2250
4. Instructor to student ratio for one section: 1:2

BIMS 491 matches students in the Biomedical Science Program with a faculty member for individualized research. Besides working one-on-one with a professor who reviews and comments on their writing, students attend two workshops through the Honors or Undergraduate Research Office, which they must document, and they complete five writing assignments, with drafts for each, including (1) literature review with hypothesis, (2) material and methods and summary of results, (3) conclusions and discussion, (4) abstract, and (5) the finished article or thesis. Appropriate models from journals are selected in conjunction with their research mentor, and students are encouraged to consult books on writing up research, a list of which is provided.

No significant changes have been made since original certification was granted.
TEXAS A&M UNIVERSITY W & C COURSE ADVISORY COMMITTEE
Request for W or C Course Status
Submitted to the Chair, W & C Course Advisory Committee
University Writing Center, MS 5000

1. This request is submitted to Valerie Balester, Chair, W & C Course Advisory Committee, and concerns
(enter prefix, number, and complete course title):

_BIMS 491 research_

2. Have this form signed by both the department head and the college dean. Provide a copy of the
syllabus to the college dean.

3. Once signed, please submit this form to the University Writing Center, MS 5000.

Instructor / Coordinator: Elizabeth Crouch (coordinator) E. Crouch 10/4/13
Printed name and signature (Date)

Received: Valerie Balester 10/10/13
(W Course Coordinator, University Writing Center) (Date)

Approvals:

College Dean: Printed name and signature (Date)

Department Head: Tiffany Cashin 10-4-13 Printed name and signature
Evelyn Tiffany-Castiglioni (Date)
Course: BIMS 491 Research
Meeting time: TBA
Meeting location: TBA (faculty research laboratory)
Credit hours: 3 credits
Instructor: Faculty research advisor

Text: Please meet with your research advisor to choose a journal appropriate to your discipline. This journal will be used as a model in writing assignments noted below. You should also obtain the Instructions to Authors for the journal chosen. These instructions typically appear on the journal’s website.

Although no textbooks are required, books are available that can aid in this course. Among these books are the following:


You are encouraged to consult one or more of these books.

General Description: This course is meant to be a culmination of an undergraduate research project lasting at least two semesters. You should meet the following criteria to participate in this course:

- Biomedical Sciences student
- 3.0 overall TAMU GPA
- Junior/Senior classification
- Common Body of Knowledge courses completed
- Completed at least 3 hours of BIMS 485 credit
- Preferred: Completed BIMS 481 (Seminar in Writing) or VIIBS 310 (Biomedical Writing).

Course objectives:

- Through bench research, literature review, and discussion with your faculty research advisor you are to produce quality scientific writing. This writing will take a variety of forms, including a literature review, an abstract, and a research summary.
- In some cases, you may write an undergraduate thesis.
- You are highly encouraged to present during Student Research Week.
• This course qualifies as writing intensive; therefore drafting, receiving feedback, and revising are integral to it.

Course Description from the Catalog: Research conducted under the direction of faculty member in biomedical sciences.

Learning Outcomes:
• Identify a unique scientific problem to research and present through preparing a poster, an abstract, or an undergraduate thesis.
• Complete research pertaining to your writing project and analyze data gathered during that research.
• Correlate research with classroom learning and coherently present results for peer review.

Grade: This course is graded on letter grade scale as given below. Percentages for each assignment are as follows:

• 2.5% each= 5% of grade: Attend two writing workshops through the University Writing Center, the Texas A&M University Honors Programs, or the Texas A&M University Office of Undergraduate Research. Students should submit a list of at least three items learned at each of the two workshops.
• 25% of grade: Complete research pertaining to your writing project. Students should discuss these 25 points with the professor mentor to ensure expectations are met. If you are completing research in a wet lab, Laboratory Safety training should be completed and on file with your research mentor.
• 70% of grade: Complete five writing assignments (each including a rough draft and a final draft) as given below
  o A) Literature Review and Scientific Hypothesis: 10%
  o B) Materials and Methods and Summary of Results: 10%
  o C) Draft of Research Conclusions/Discussion: 10%
  o D) Abstract: 10%
  o E) Journal Article or Thesis: 30%
• You may also be asked to complete any additional requirements for the (Honors) Undergraduate Research Fellows Program or the Undergraduate Research Scholar Program through the Texas A&M University Office of Undergraduate Research. (Students participating in these programs will receive details from the respective offices.)

Note: Papers are due by 5 p.m. the Friday of the week listed. If they are not submitted by this time, they will lose 20 points for each weekday thereafter that they are late. For example, if a paper is due Friday, September 25, but you turn it in on Monday, September 28, the most you can earn is 80 points.

Grading Scale:

90-100% = A


80-89% = B
70-79% = C
60-69% = D
0-59% = F

Course Content/Writing Content

1. Student is expected to be completing research or in the library for a minimum of 10 hours/week. **This will require students to complete all appropriate laboratory safety training courses and to sign a safety agreement form. Students should check with their professor mentor to accomplish this task.**

2. Student is expected to attend two writing seminars through the University Writing Center, the Texas A&M University Honors Programs, or the Texas A&M University Office of Undergraduate Research. Attendance should be verified using the attached form.

3. First writing assignment: Literature Review with Hypothesis Statement
   Papers, posters, conference presentations, and theses typically require an extensive review of the literature before writing. This first assignment should be a review of literature pertinent to your research project. It should encompass and build toward a purpose of study statement, including a background explanation for your research study. A strong scientific hypothesis should be included. This literature review should run at least 1000 words. Particular attention should be paid to proper citation. A reference list, in the format of the journal chosen as your course “text,” must be included. The reference list does not count in the 1000 words required for the review.

4. Second writing assignment: Materials and Methods and Summary of Results
   All journal articles, posters and theses contain a detailed record of research methods. You should write a clear description of the procedures performed while completing your research. Research results are the heart of any original publication or presentation. The second assignment should include a summary of research results obtained in both this and previous semesters in the laboratory. The Materials and Methods will vary in length. The Summary of Results should run at least 600 words.

5. Third writing assignment: Draft of Research Conclusions/Discussion
   This assignment should demonstrate research conclusions and integrate your findings with established knowledge detailed in the introduction/purpose of study. Discussions often include a few paragraphs on future directions your research may take. The conclusions/discussion should be 500-1000 words.
6. Fourth writing assignment: Abstract (This assignment will be due immediately after the third writing assignment.)
   A 150-word abstract suitable for a journal publication or a poster proposal should be written. The abstract should follow the format used in the journal chosen as a model.

7. Fifth writing assignment: Journal article or thesis
   The culminating paper should incorporate or draw on each of the first four writing assignments. It should include an Introduction, a Methods section, a Results section, a Discussion, a final reference list, and any other needed components, including a title. This assignment should be at least 2000 words (not including the reference list). Particular care should be given to scientific accuracy, proper citations, audience, and goal of the work.

Policies:

1. A university-excused absence is the only excuse acceptable for missing an assignment. For information regarding what constitutes an excused absence, please see http://student-rules.tamu.edu/rule07. For absences related to illness, confirmation of a visit to a health care professional will be required. For other university-excused absences, please see your advisor to ascertain the documents needed to confirm your absence.

2. Late work is unacceptable unless the student has a university-excused absence.

3. Academic Integrity Statements AGGIE HONOR CODE

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

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

   Scholastic dishonesty will not be tolerated! Any dishonesty will result in a zero for the paper (i.e. Dishonesty includes plagiarism).

   The Aggie Honor Code, definitions of academic dishonesty, and procedures for handling dishonesty cases may be found at http://aggiehonor.tamu.edu/ I recommend all students read this!

4. The American with Disabilities Act Policy Statement is as follows (from the Dean of Faculties website):
**Americans with Disabilities Act (ADA) Policy Statement**

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

*The aforementioned policies are in compliance with and derived/copied from the TAMU Rules and Regulatory Compliance statements found in the policies and rules section of the TAMU website, as well as the website for the Aggie Honor System Office and the Dean of Faculties and Associate Provost Office.*

**Weekly schedule**

| Week 1 | a) Meet with advisor/mentor.  
b) Continue research | Discuss scope and plans for the writing projects for the semester. |
|--------|--------------------------------------------------|------------------------------------------------------------------|
| Week 2 | a) Do research for literature review and start writing.  
b) Continue research | Read/take notes on at least 5 or 6 papers for first writing assignment. |
| Week 3 | a) Continue writing literature review.  
b) Continue research | Read additional papers (total 6 to 10 papers) for the first writing assignment. |
| Week 4 | a) Submit literature review with reference list  
b) Continue research | First draft DUE by 5 p.m. Friday |
| Week 5 | a) Attend seminar in writing by end of this week.  
b) Pick up feedback on literature review.  
c) Research | a) Provide proof of attendance at one writing seminar by 5 p.m. Friday.  
b) Final draft of literature review and reference list DUE 5 p.m. Friday. |
| Week 6 | a) Draft Materials and Methods/Summary of Results.  
b) Research | By Friday, you should have your Materials and Methods written, with a summary started. |
<p>| Week 7 | a) Pick up literature review and reference list. Continue writing on Materials and Methods/Summary of Results. | First Draft DUE by 5 p.m. Friday |</p>
<table>
<thead>
<tr>
<th>Week</th>
<th>Tasks</th>
<th>Due Dates</th>
</tr>
</thead>
</table>
| Week 8 | a) Begin drafting Research Conclusions/Discussion.  
  b) Pick up feedback on Materials and Methods/Summary of Results.  
  c) Research                       | Final Draft Materials and Methods/Summary of Results DUE by 5 p.m. Friday |
| Week 9 | a) Finish drafting Research Conclusions/Discussion  
  b) Pick up Final Draft of Materials and Methods/Summary of Results.  
  c) Research                       | First Draft of Research Conclusions/Discussion DUE by 5 p.m. Friday         |
| Week 10| a) Pick up feedback on Research Conclusions/Discussion.  
  b) Begin drafting Abstract.  
  c) Research                          | Final Draft Research Conclusions/Discussion DUE by 5 p.m. Friday.            |
| Week 11| a) Finish drafting Abstract.  
  b) Begin drafting Final Paper/Thesis  
  c) Pick up Final Draft Research Conclusions/Discussion  
  d) Research                         | a) First Draft of Abstract DUE by 5 p.m. Friday.                              |
| Week 12| a) Attend second seminar in writing by the end of this week.  
  b) Pick up First Draft comments on your Abstract  
  c) Continue writing Final Paper/Thesis  
  d) Research                          | a) Provide proof of attendance at second writing seminar by 5 p.m. Friday.  
  b) Final Draft of Abstract DUE by 5 p.m. Friday  
  c) Allow mentor to view an outline of your Final Paper/Thesis by 5 p.m. Friday. |
| Week 13| a) Continue working on final paper/thesis:  
  --Pick up feedback on outline of Final Paper/Thesis early in the week  
  --Produce polished First Draft of Final Paper/Thesis by Friday.  
  b) Finish up all final experiments                     | First draft of Final Paper/Thesis DUE by 5 p.m. Friday                        |
| Week 14| a) Pick up feedback on First Draft of Final Paper/Thesis  
  c) Finalize all experiments             | DUE by 5 p.m. on last day of final examinations (If you are writing an undergraduate thesis, due dates must be adjusted to reflect the rules as set forth through the Honors Program or the Office of Undergraduate Research.) |
*Proof of attendance MUST state the name of the seminar, location of the seminar, and the date/time of the seminar. Also, you may turn in copies of any handouts that were given as further proof of attendance. A signature from the presenter should be obtained at the end of the seminar. At the bottom of the page, a short description of three items learned should be written.

_________________________ attended ______________________ on
Name of Participant                        Name of Seminar

_________________________ at ___________
Date                         Time

_________________________________________ SIGNATURE OF PRESENTER
*Proof of attendance MUST state the name of the seminar, location of the seminar, and the date/time of the seminar. Also, you may turn in copies of any handouts that were given as further proof of attendance. A signature from the presenter should be obtained at the end of the seminar. At the bottom of the page, a short description of three items learned should be written.

__________________________ attended __________________________ on
Name of Participant __________________________ Name of Seminar

__________________________ at ________________
Date ________________ Time ________________

__________________________ SIGNATURE OF PRESENTER
TO: Faculty Senate Executive Committee
FROM: Valerie Balester, Chair, W and C Course Advisory Committee
CC: Andy D. Herring, Department of Animal Science
   H. Russell Cross, Head, Department of Animal Science
   Kim Dooley, AOC Dean, College of Agriculture and Life Sciences
DATE: November 11, 2013
SUBJECT: REPORT ON RECERTIFICATION OF C COURSE: ANSC 406

We recommend that ANSC 406 Beef Cattle Production and Management be certified as a communications (C) course for four academic years (1/14 to 1/18). We have reviewed a representative syllabus and have determined that the course meets or exceeds the following criteria:

1. Percentage of final grade based on writing quality: 30%
2. Course content appropriate to the major
3. Total number of words: 2500
4. Total minutes of oral performance: 5 minutes
5. Instructor to student ratio for one section: 1:15

ANSC 406 is a 4-credit course that requires individual research papers of at least 1250 words, for which students get formative feedback on an outline and a draft. They also complete a report in writing and in oral form, collaboratively. They start with two short preliminary presentations for formative feedback. They also write two draft versions of portions of the final report for formative feedback. For instruction, students read an extension publication that serves as a model and also search out models from research reports for their research paper. They also view samples of professional speaking.
TEXAS A&M UNIVERSITY W & C COURSE ADVISORY COMMITTEE
Request for W or C Course Status
Submitted to the Chair, W & C Course Advisory Committee
University Writing Center, MS 5000

1. This request is submitted to Valerie Balester, Chair, W & C Course Advisory Committee, and concerns (enter prefix, number, and complete course title):

    ANSC 406 Beef Cattle Production and Management

2. Have this form signed by both the department head and the college dean. Provide a copy of the syllabus to the college dean.

3. Once signed, please submit this form to the University Writing Center, MS 5000.

Instructor / Coordinator: Andy D. Herring 10/4/13
Printed name and signature

Received: Valerie Balester 10/14/13
(W Course Coordinator, University Writing Center)
(Date)

Approvals:

College Dean: Kim Dorley 10/9/13
Printed name and signature Mark Hussey

Department Head: H. Russell Cross 10/4/13
Printed name and signature

1.214 Sterling C. Evans Library
5000 TAMU
College Station, TX 77843-5000
Tel. 979.458.1455 Fax 979.458.1466
writingcenter.tamu.edu
ANSC 406 Fall 2013

Texas A&M University
Beef Cattle Production and Management

Instructor: Andy D. Herring, Associate Professor
Kleberg Room 432
Phone: 845-9284 E-mail: andy.herring@tamu.edu
Office hours: MWF 10:00 AM to noon
R 8:30 to noon
Appointments are always encouraged, and lots of other times are available.

Lab Instructors: Isaac Olvera, Kleberg 435
Stefen Tucker, Kleberg 422A

Prerequisites: ANSC 305 Animal Breeding & Genetics
ANSC 303 (Nutrition) or 318 (Feeds and Feeding)
ANSC 433 Reproduction

It is not mandatory that students have completed all prerequisites before enrolling, but, extra reading/study time will probably be required for certain course components. Students that do not have any of the prerequisites (or similar courses), or are of freshman/sophomore standing should not remain enrolled in the course. Additionally, as a C designated course, there is additional work and specific guidelines on writing assignments and oral presentations.

Objective:

This course covers the major principles involved for profitable and sustainable, integrated beef cattle production from the perspective of the U.S. cow-calf sector and from a systems-based approach. The primary learning outcomes for this course will be to: (1) understand the fundamental concepts associated with cow-calf production and how they interact, (2) identify, interpret and convey research that addresses a specific beef cattle production topic through a research paper, and (3) communicate production recommendations for a specific scenario through an oral presentation and complementary written report through a group project.

Recommended Text:

Reference:
Class time and locations:

Lecture - 9:10 - 10:00 MWF, Kleberg 123
Lab sections 930/931 - 12:40 - 2:30 Wednesday, TAMU Beef Center
Lab sections 932/933 - 3:00 - 4:50 Wednesday, TAMU Beef Center

Topics:

History and utilization of biological types and breeds of cattle, Utilization of performance records, Breed differences and breeding systems, National cattle evaluation programs, Structure of U.S. cattle industry, Reproductive concepts and management, Replacement heifer development, Cow culling decisions, Herd health management, Nutritional/growth aspects/management, Management of feed/pasture resources, Marketing opportunities and considerations, Market grades and pricing of cattle, Systems approach to beef production, Current industry concerns, Global issues

Attendance:

Attendance is crucial for learning, is mandatory for this class, and will be monitored at each lecture and lab meeting. Students with no unexcused absences (lecture and lab) will be eligible for a two-point curve at the end of the semester (87.5 is an A, 77.5 is a B, etc.). More than six (6) unexcused absences will result in your final grade in the course to be reduced by one letter grade.

ADA Policy:

The department, college and university endorse PL 101-336, the “Americans with Disabilities Act of 1990”. Students with disabilities are encouraged to inform the instructor so that any needed accommodations can be provided. All attempts will be made to maintain confidentiality. More information is available at TAMU Student Disability Services: http://disability.tamu.edu; phone: (979) 845-1637.

Course grade

There will be three lecture exams and a final exam scheduled as:

- Exam I: Friday, September 20 (material ends Sep 16)
- Exam II: Friday, October 18 (material ends Oct 14)
- Exam III: Friday, November 15 (material ends Nov 11)
- Final Exam: Monday, December 9 – 8:00 to 10:00 AM

Final grade will be based on:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three lecture exams</td>
<td>33%</td>
</tr>
<tr>
<td>Individual research paper</td>
<td>15%</td>
</tr>
<tr>
<td>Group ranch project</td>
<td>15%</td>
</tr>
<tr>
<td>Homework exercises</td>
<td>25%</td>
</tr>
<tr>
<td>Final exam (all new material)</td>
<td>12%</td>
</tr>
</tbody>
</table>

Grading scale:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.5 - 100</td>
<td>A</td>
</tr>
<tr>
<td>79.5 - 89.4</td>
<td>B</td>
</tr>
<tr>
<td>69.5 - 79.4</td>
<td>C</td>
</tr>
<tr>
<td>59.5 - 69.4</td>
<td>D</td>
</tr>
<tr>
<td>Below 59.5</td>
<td>F</td>
</tr>
</tbody>
</table>
Research Paper:

You will be required to write an in-depth, scientific review of information specific to a topic related to the U.S. beef industry. This paper will follow the general writing style of the Journal of Animal Science. Possible topics and the schedule and expectations associated with the outline, summary/draft, and final version (due by 5:00 PM on Monday, November 4) are attached at the end of the syllabus. You are encouraged to incorporate information from your research paper into the Group Ranch Project.

Ranch Project:

You will be assigned to a group of 4 or 5 students to conduct an in-depth ranch plan for a specific production scenario within Texas. Your group will give a 15-minute presentation during lab on November 27, 20 that highlights your most important points. This presentation must be done in Microsoft Powerpoint TM. A written report that describes the ranch project will be due on November 20. Details on the ranch project will be given during the second lab, and you will work on components of the project as well as activities in lab as a group throughout the semester. Your group will give two short (5-minute) practice presentations before the final presentation.

Participation by all members of your group is crucial for your success! You will confidentially evaluate all members of your group (and they will evaluate you). This peer evaluation will add or subtract up to 20 points for the project grade. Unfavorable evaluations of you by your group may result in you receiving a grade of "F" for the project. The peer evaluation form is attached.

Lab:

The lab period is designed to complement lecture topics with a more “hands on” type of approach and group activities. You will be meeting at the TAMU Beef Center (approximately six miles west of campus on FM 60-Raymond Stotzer Parkway) during lab periods. You will be assigned approximately 6 homework assignments during the semester. Don’t start or try to finish your homework a few minutes before class/lab time.

Take home assignments that are turned in one to seven days after the due date will receive an automatic 25-point discount. Assignments turned in over 7 days late will not be accepted, and the resulting grade will be a “0.” Students with excused absences will be allowed to make up homework assignments within these same guidelines with modified due dates.

Field trip:

We will go on a field trip this semester to J.D. Hudgins, Inc. in Hungerford, TX. It is for your educational benefit and enjoyment to attend the field trip. We have to go outside of lab time. This counts as a university-sponsored activity; a memo will be provided for your other courses.
Attendance for the field trip is not mandatory; however, you should plan on going, and, you will receive extra credit for going (such as removal of 1 or 2 unexcused absences, dropping your lowest homework grade, or something else beneficial......).

Class conduct:

As participants in a senior-level course at one of the main universities in the United States, there is a lot expected of you because you have a lot of potential for success in life. Asking of questions and discussion of relevant information in and outside class is highly encouraged; however, talking to neighbors, texting, sleeping, or studying for other courses during class time will not be tolerated. *Come to class ready for discussions (you will be called upon).*

NO CELL PHONES. If you have a cell phone that rings during class, you will automatically receive an unexcused absence for that class meeting. If you have an emergency situation where you need to have a cell phone on during class, let me know ahead of time. *Cell phones, iPhones, BlackBerries, or other electronic communication devices with built-in calculators can not be used for exams; only actual calculators will be allowed.*

Aggies do not lie, cheat, or steal, or tolerate those who do.

Because of consequences for the student, knowledge of the Aggie Honor Code, from definitions of academic misconduct to the process and sanctions that may result should be familiar to both faculty members and students. All aspects are described fully on the Aggie Honor System website [http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/).
<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture topic(s)</th>
<th>Date</th>
<th>Lecture topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/26 M</td>
<td>Introduction and structure of U.S. beef cattle industry</td>
<td>10/16 W</td>
<td>Calf nutritional aspects - preweaning and postweaning</td>
</tr>
<tr>
<td>8/28 W</td>
<td>Historical and current approaches to genetic improvement</td>
<td>10/18 F</td>
<td>Exam II</td>
</tr>
<tr>
<td>8/30 F</td>
<td>Genetic resources – breed and animal choices</td>
<td>10/21 M</td>
<td>Nutritional management of cow herd</td>
</tr>
<tr>
<td>9/2 M</td>
<td>Fundamentals of crossbreeding</td>
<td>10/23 W</td>
<td>Protein and energy supplementation</td>
</tr>
<tr>
<td>9/4 W</td>
<td>Crossbreeding programs – terminal crosses and systems</td>
<td>10/25 F</td>
<td>Grazing animal considerations</td>
</tr>
<tr>
<td>9/6 F</td>
<td>Crossbreeding programs – continuous systems</td>
<td>10/28 M</td>
<td>Pasture management/grazing systems</td>
</tr>
<tr>
<td>9/9 M</td>
<td>Combination crossbreeding systems and management considerations</td>
<td>10/30 W</td>
<td>Grazing systems</td>
</tr>
<tr>
<td>9/11 W</td>
<td>Genotype by Environment interactions</td>
<td>11/1 F</td>
<td>General pasture management considerations</td>
</tr>
<tr>
<td>9/13 F</td>
<td>Current information available for selection of replacement animals</td>
<td>11/4 M</td>
<td>Considerations to minimize feed expenses</td>
</tr>
<tr>
<td>9/16 M</td>
<td>Non-traditional inheritance aspects such as imprinting, epigenetics, etc.</td>
<td>11/6 W</td>
<td>Management of environmental resources</td>
</tr>
<tr>
<td>9/18 W</td>
<td>Animal identification and which records to keep</td>
<td>11/8 F</td>
<td>U.S. industry structure and market structure</td>
</tr>
<tr>
<td>9/20 F</td>
<td>Exam I</td>
<td>11/11 M</td>
<td>Marketing alternatives and considerations for cattle producers</td>
</tr>
<tr>
<td>9/23 M</td>
<td>Controlled breeding and calving seasons</td>
<td>11/13 W</td>
<td>To be determined</td>
</tr>
<tr>
<td>9/25 W</td>
<td>Calf and cow size considerations and implications for production traits</td>
<td>11/15 F</td>
<td>Exam III</td>
</tr>
<tr>
<td>9/27 F</td>
<td>Body condition score and associated management considerations</td>
<td>11/18 M</td>
<td>Retained ownership and end-product considerations/Value-added</td>
</tr>
<tr>
<td>9/30 M</td>
<td>Replacement heifer development management</td>
<td>11/20 W</td>
<td>Profitability, business and management philosophy considerations</td>
</tr>
<tr>
<td>10/2 W</td>
<td>General cow herd reproductive culling and longevity considerations</td>
<td>11/22 F</td>
<td>Production system comparisons and considerations</td>
</tr>
<tr>
<td>10/4 F</td>
<td>Reproductive health management for bulls and females</td>
<td>11/25 M</td>
<td>Societal issues affecting U.S. beef cattle operations and production</td>
</tr>
<tr>
<td>10/7 M</td>
<td>To be determined</td>
<td>11/27 W</td>
<td>Global issues and perspectives</td>
</tr>
<tr>
<td>10/9 W</td>
<td>Bull reproduction and management</td>
<td>11/29 F</td>
<td>Thanksgiving holiday – No class</td>
</tr>
<tr>
<td>10/11 F</td>
<td>Fundamentals of health, vaccination and immunity</td>
<td>12/2 M</td>
<td>Threats and opportunities for the U.S. beef industry</td>
</tr>
<tr>
<td>10/14 M</td>
<td>Growth and development of cattle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# ANSC 406 BEEF PRODUCTION LABS

## Tentative Schedule – Fall 2013

<table>
<thead>
<tr>
<th>Date</th>
<th>Lab topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 28</td>
<td>Cattle biological types and breeds</td>
</tr>
<tr>
<td>September 4</td>
<td>Crossbreeding system comparisons</td>
</tr>
<tr>
<td>September 11</td>
<td>Beef cattle performance records</td>
</tr>
<tr>
<td>September 18</td>
<td>Breeding cattle evaluation and selection</td>
</tr>
<tr>
<td>September 25</td>
<td>Body condition scoring and cow culling decisions</td>
</tr>
<tr>
<td>October 2</td>
<td>Reproductive management and herd health</td>
</tr>
<tr>
<td>October 9</td>
<td>Stocker/feeder calf evaluation and beef quality assurance</td>
</tr>
<tr>
<td>October 16</td>
<td>Feed resources management</td>
</tr>
<tr>
<td>October 23</td>
<td>Pasture evaluation and stocking rate problems</td>
</tr>
<tr>
<td>October 30</td>
<td>Field trip – J.D. Hudgins, Inc., Hungerford, TX</td>
</tr>
<tr>
<td>November 6</td>
<td>Fed cattle evaluation and value determination</td>
</tr>
<tr>
<td>November 13</td>
<td>Lab practicum</td>
</tr>
<tr>
<td>November 20</td>
<td>Ranch Project Presentations</td>
</tr>
<tr>
<td>November 27</td>
<td>No lab – Thanksgiving holiday</td>
</tr>
</tbody>
</table>

\(^1\)All labs will meet at the Beef Center, a component of the TAMU O.D. Butler Animal Science Teaching, Research and Extension Complex, which is approximately six miles southwest of campus on FM 60, unless otherwise indicated.

Lab attendance is mandatory and is reflected in the overall class attendance (see Attendance in the class syllabus). If a person must attend lab at a time for which they are not assigned, it is their individual responsibility to report their attendance to the lab instructor of their assigned lab. Keep your instructors informed.

As a part of lab (and as another extra credit opportunity), you will be given the opportunity to complete the NCBA Master of Beef Advocacy Program. You can read more about this program at: [http://www.beef.org/masterofbeefadvocacy.aspx](http://www.beef.org/masterofbeefadvocacy.aspx).
ANSC 406
Guidelines for Research Papers

There will be three stages in the development of your research paper: (1) an outline, (2) a draft stage with 2-3 pages of writing, and (3) the final version. The goal is to have the final version as a scientific, technically accurate, and up-to-date coverage of your selected topic that could serve as an information source for people who are searching for information on specific beef cattle related topics.

Schedule for Research Paper development:

(1) Outline  
Due by 5:00 PM on Monday, September 16

(2) Draft  
Due by 5:00 PM on Monday, October 7

(3) Final Version  
Due by 5:00 PM on Monday, November 4

(1) Outline
The outline should be no more than two pages in length and should have your name and topic at the top of the first page. There are 3 specific components to the outline: (i) the first component will be a general guide as to how your paper will be laid out, showing the sub-topic areas and the flow of the paper; (ii) the second component will be a typed, double-spaced paragraph, 75 to 100 words long describing what you know about the topic at that point, and (iii) the third component will be at least 3 references you have to this point as a Literature Cited section. The paragraph must be double-spaced, written in third-person, passive tense, and, the references must be presented in the Journal of Animal Science format as a Literature Cited section (example shown below). The points of the outline are to develop and practice organization of thoughts, writing style and format for the Literature Cited section. The outline grade counts as one homework grade.

Literature Cited


The sources in the Literature Cited section need to be in alphabetical order by the last name of the first author.

The citation fields of the sources in the Literature Cited section follow the order of:
  (1) author(s) of the paper, web page etc., (2) year of publication, (3) the title of the paper, chapter, web page, (4) the source journal, book, organization, etc., and (5) volume and page numbers if journal article (or URL and date accessed if web source, or, name of publishing company and city if a book).

Any journal article that is obtained through the internet is to be cited as a journal article, NOT as a web source.

Magazine articles, newspaper articles, information from internet blogs, and information from internet discussion groups cannot be used as references. Scientific journal articles are the preferred source, but any report or information from any governmental agency or university web site is fine. Industry group web pages may or may not be appropriate, depending upon the paper topic or information provided. Private web pages of ranches, etc. are usually not appropriate, but this also depends upon the topic and information.

(2) Draft
This must be comprised of 500 to 750 words (2 to 3 pages) of writing as it will appear in the final version. The purpose of this stage is to evaluate your writing style, interpretation and presentation of pertinent data, and use of citations. Citations are used in the text of the paper with the author and year format (i.e. Smith, 1999; Smith and Jones, 2007; Smith et al., 2009, etc.) as done in the Journal of Animal Science as opposed to MLA or some other format. This draft must include a minimum of 5 references in the Literature Cited section. This draft is to be written in the same style as the final version (double-spaced, passive tense, third person, reporting actual values from references, use of citations in text, etc.). The draft grade counts as one homework grade.

Examples of bad and good writing styles:

Bad:
You need to watch your cows to see how fat they are if you want them to drop calves.
Good:
Cow-calf producers should monitor body condition of their cows if they want to enhance reproductive performance.

Bad:
Angus have more marbling than Limousin. Limousin have better yield grades than Angus.
Good:
Wheeler et al. (2005) reported that Angus-sired steers had more marbling than Limousin-sired
steers (584 vs. 504), but had less desirable yield grades (3.4 vs. 2.4).

*Bad:*
I believe that calves should be implanted because .......................

*Good:*
Many studies have shown that use of implants .........................

The TAMU Writing Center has many resources for students online about academic writing at [http://writingcenter.tamu.edu/](http://writingcenter.tamu.edu/). It is very important to understand what plagiarism is, and how to avoid it. The main ways to avoid plagiarism are: (1) do not turn in the same or a very similar paper for more than one course (someone else’s or your own), (2) paraphrase what your resources have said, don’t ever copy, and (3) give credit to where you got information through use of citations.

(3) Final Version
The actual paper (final version) will follow the general style and format of the *Journal of Animal Science* (which can be viewed at [http://www.asas.org](http://www.asas.org)). The final version should be comprised of approximately 1250 words (about 4 to 5 pages of writing not counting cover page or Literature Cited section). The final version of the paper should include somewhere between 10 and 15 sources in your Literature Cited section, but exceptions may occur with specific topics. The paper layout will consist of the following sections:

1. **Cover page** (your name, paper title, date and “Student Research Summary ANSC 406 Texas A&M University, College Station 77843”) – this will be on a separate page.
2. **Introduction** (75 to 100 words) – why is this topic important, and what will you discuss.
3. **Literature Review** (summary of research findings, what were the actual results of the study and how do they fit with results from other studies; you can use sub-headings or not, this must contain only writing in paragraph style, i.e. no bulleted lists, no tables, figures, graphs, pictures, etc.)
4. **Summary** (75 to 100 words) – why was it important to discuss this topic, and what were the take-home main points, how should producers/consumers use this information, etc.
5. **Literature Cited** (single spaced within citations, double spaced between citations and in alphabetical order based on last names of first authors as shown on previous page)

The headings (2 through 5 above) should be boldfaced and centered (like “Literature Cited” is first page). Your paper should be typed as a single Microsoft WORD file or converted to a single pdf file, be double-spaced (this is single-spaced), have one-inch margins, have a ragged right edge (i.e. not right-hand justified), use 12 point font (this is Calibri 12 pt), and emailed as an attachment to andy.herring@tamu.edu along with a printed copy of the final version. The grade for the final version of the paper is worth 15% of the grade in the course. The review and grading instrument used for the final version is found on the following page.
ANSC 406 Research Paper Review Sheet

Paper content (65 points)

Adequate coverage of topic: 

_____ points

Important questions/areas not included:

Importance of topic conveyed to reader:

Supporting data from sources:

Interpretation and presentation of data from sources:

Style and form, adherence to guidelines (35 points) 

_____ points

Writing style:

Use of citations:

Flow of paper:

Grammatical/typographical errors:

_____ Grade
ANSC 406 - Potential Research Paper Topics

Cow-calf
1. Heterosis for beef cow reproduction and calf growth
2. Factors that affect calf survival to weaning
3. Breed differences for age of puberty
4. Comparison of fixed-time vs. observed estrus synchronization protocols
5. Genotype-environment interactions for beef cow productivity
6. Effects of cow size on maintenance cost
7. Beef breed differences for calf growth and/or weaning weight
8. Effects of early calf weaning on beef cow reproduction
9. Feeding of distiller's grains in developing bulls and heifers (or mature animals)
10. Factors affecting longevity of beef cows
11. Disease (fill in the blank) considerations for beef cow herds
12. Impacts of temperament on beef cow productivity
13. Identification of factors that affect profitability for cow-calf producers
14. Retained ownership considerations for cow-calf producers
15. Factors that affect prices/value of culled cows and bulls
16. Grazing distribution/pasture utilization of beef cows
17. Incidence of beef carcase injection site lesions from calfhood vaccinations/injections
18. Factors affecting prices of U.S. feeder calves
19. Alternate calf selling strategies for cow-calf producers
20. Factors that impact mature cow size
21. Effects of reciprocal Bos indicus-Bos taurus crosses

Stocker/Feedlot
1. Comparison of distiller's grains vs. corn in feedlot finishing diets
2. Calf health related to cost of gain in stocker programs/finishing systems
3. Effects of stocking rate on calf performance
4. Management aspects and feedlot cattle behavior
5. Genetic aspects of feed intake
6. Supplement considerations for stocker calves
7. Comparisons of different forages for stocker operations
8. Nutritional management of early weaned beef calves
9. Comparison of internal parasite control products
10. Comparison of grain processing techniques on feedlot cattle performance
11. Rotational vs. continuous grazing systems for stocker calves
12. Impacts of respiratory disease on feedlot cattle performance
13. Does eating behavior/pattern of cattle impact their performance?
14. Use of chicken litter on pastures grazed by cattle
15. Identification of PI (persistently infected) BVDV cattle
16. Factors that impact prices of feeder calves
17. Use of ractopamine (Optiflexx) in cattle finishing systems
18. Use of ultrasound in feedlot cattle management/marketing
19. Impacts of corn prices on feedlot cost of gain and profitability
20. Use of zilpaterol in cattle finishing systems
21. Impacts of disease (fill in the blank) on feedlot cattle
End Product Considerations
1. Effects of implants on beef tenderness
2. Breed differences for marbling ability
3. Use of genetic tests/genetic markers for beef quality traits
4. Survey of carcass traits of U.S. beef cattle (National Beef Quality Audits)
5. Factors that affect consumers’ decisions in purchases of beef
6. Impacts of cattle health on carcass traits
7. Effects of electrical stimulation on beef characteristics
8. Factors that affect external fat on beef carcasses
9. Fatty acids in beef as related to quality/palatability and/or consumer health
10. Relationship between marbling and tenderness in beef
11. Factors that affect shelf life of fresh beef
12. Breed differences for traits affecting red meat yield (rieye area, fat thickness)
13. Use of EPDs for carcass traits
14. Evaluation of “organic” and/or “natural” beef programs vs. conventional programs
15. Grass-fed beef production considerations for U.S. producers
16. Relationship between fat thickness and marbling of beef carcasses
17. Survey of USDA certified beef programs
18. Fatty acid profiles of beef from cattle fed different feeds (or different types of beef cuts)
19. Comparison of beef grading programs in different countries
20. High beef prices – good or bad for industry?
21. Impacts of instrument grading of beef carcasses

General and/or Public Issues
1. Effects of grazing cattle on public lands
2. Issues of land fragmentation and its impacts on U.S. beef cattle industry
3. Effects of stress on beef cattle productivity
4. Role and potential of fetal programming to influence beef cattle production
5. Hormones in beef products
6. Production of methane by beef cattle
7. Environmental impacts of manure from cattle feedlots
8. Production and utilization of cloned and/or transgenic cattle
9. Considerations for red meat levels in human diets
10. Cattle vs. wildlife considerations for Texas ranches
11. Impacts of beef cattle industry on U.S. (or Texas) economy
12. Import markets of beef products or export markets for U.S. beef products
13. Influences of animal rights groups on U.S. beef production
14. Comparisons of beef production in USA versus other areas of world
15. Keeping Foot and Mouth Disease (FMD) out of the USA
16. Consumer surveys and/or perceptions about U.S. beef and/or beef production
17. Do cattle contribute to global warming?
18. U.S. downer cows at packing plants
19. Economic impacts of high fuel and/or feed prices on U.S. beef production
20. Is tick fever a real threat to U.S. cattle industry?
21. Risks of external threats to U.S. beef cattle industry
ANSC 406
Ranch Enterprise Project

As a group, you will develop a ranch management plan with a beginning scenario and certain fixed factors that will be provided. Your goal is to act as a consultant group and provide the owners of the ranch with recommendations. At the end of the semester you will turn in a written report (due November 20) and make a 15-minute presentation in lab (November 27) highlighting the main points in the report. Copies of reports from previous years will be provided.

The outline below should be followed to prepare the written report.

I. Introduction
   • County and ranch location
   • Starting scenario and owner profile
   • Initial financial aspects (cash on hand, what is invested, etc.)

II. Topography
   • Types of grasses (predominant species, improved vs. native, warm season vs. cool season, etc.)
   • Soil type
   • Historical annual rainfall
   • Water table and sources
   • Predominant mineral deficiencies and/or concerns for area

III. Improvements
   • Fences that need repair (options in fence type and costs, time frame for completions, etc. if necessary)
   • Types of materials used and costs
   • Pasture improvements (improved forages, cost of grass seed and establishment, fertilizer, installing new cross fences, annual maintenance issues, etc.)
   • Water improvements (wells drilled, pipeline put in, tanks/ponds built, etc. and associated costs and maintenance considerations)
   • Facilities (working facilities, pens, pen layout, new cross fences, etc.)

IV. Production Systems
   • Identify which production systems need to be and/or could be used (purebred/seedstock, commercial cow-calf, replacement heifers, stocker cattle, bull development, etc., and, which combination(s) might be most effective)
• Breed(s) and/or crossbred combination(s) – breed production advantages and disadvantages, regional adaptation, market acceptance, target market etc.
• Sire selection criteria (reasons for selection, EPDs emphasized, traits to evaluate, etc.)
• Calving and breeding season(s) considerations

V. Animal Health and Nutritional Considerations
• Mature cows
• Bulls
• Replacement heifers
• Calves pre-weaning and post-weaning
• Other cattle (i.e. stocker calves, animals destined for specialized marketing programs, etc.)

VI. Marketing Strategies
• What types of animals (calves, steers, heifers, cows) can be marketed in different ways
• Target market(s) to go after

VII. Financial Aspects
• Total annual operational budget
• Expenses and income projected on a per cow annual basis

VIII. Summary and Overall Recommendations
Group Members for Ranch Project:

On a scale of 0 to 10 (0 = extremely poor, 10 = superior) rank each member of your group, including yourself, for the following points:

Overall level of participation

Contribution of ideas for project

Ability to draw useful information from sources, references, etc.

Willingness to work for success of your group
INSTRUCTOR EVALUATION
ANSC 406
Group Ranch Projects
Fall 2013

Instructor: ______________________

County/Members for Ranch Project:

Organization:

Thoroughness:

Presentation Aspects:

General Comments:

_______ points out of 100
TO: Faculty Senate Executive Committee

FROM: Valerie Balester, Chair, W and C Course Advisory Committee

CC: Michael D. Johnson, Department of Engineering Technology and Industrial Distribution
    Walter Buchanan, Head, Department of Engineering Technology & Industrial Distribution
    Valerie Taylor, AOC Dean, Dwight Look College of Engineering

DATE: November 11, 2013

SUBJECT: REPORT ON RECERTIFICATION OF C COURSE: ENTC 422

We recommend that ENTC 422 Manufacturing and Mechanical Engineering Technology Projects be certified as a communications (C) course for four academic years (1/14 to 1/18). We have reviewed a representative syllabus and have determined that the course meets or exceeds the following criteria:

1. Percentage of final grade based on writing quality: 70%
2. Course content appropriate to the major
3. Total number of words: 2800
4. Total minutes of oral performance: 11
5. Instructor to student ratio for one section: 1:25

ENTC 425 is a two-credit course. Given the varying enrollment of the course, the ETID department has agreed to provide adequate support to hire trained graders if the course enrollment is greater than 25. Any faculty member in the present or future teaching this course will have this support. Individually, students write a project application, and progress memos. They also write sections for collaborative projects: a project proposal, a mid-term report, a project log book, and a final report. Each student is required to write and present approximately two weekly progress memos. They also present on their progress, present a project proposal, present a mid-term report on progress, and do an oral presentation of the final project. All team members must speak during oral presentations, and part of the oral presentation grade is based on inclusion. For feedback, students complete a preliminary writing assignment that is peer reviewed and discussed in class. Sections of the major writing assignments repeat during the semester; this allows comments to be taken into account and revisions made on the final report, which is weighted significantly higher than earlier assignments. A combination of modeling, lecture, and discussion is used to provide instruction. A lecture is given early in the semester covering presentations and speaking; this includes modeling of both appropriate and inappropriate practices. A non-graded exercise is also done at the beginning of the semester to provide the students an opportunity to speak and get feedback from peers. During the course of the semester, feedback is provided to the whole class regarding common issues that arise in either the written or oral presentations; this feedback forms the basis for class discussions.

No significant changes have been made since original certification was granted.
TEXAS A&M UNIVERSITY W & C COURSE ADVISORY COMMITTEE
Request for W or C Course Status
Submitted to the Chair, W & C Course Advisory Committee
University Writing Center, MS 5000

1. This request is submitted to Valerie Balester, Chair, W & C Course Advisory Committee, and concerns (enter prefix, number, and complete course title):

   ENTC 422 – Manufacturing and Mechanical Engineering Technology Projects

2. Have this form signed by both the department head and the college dean. Provide a copy of the syllabus to the college dean.

3. Once signed, please submit this form to the University Writing Center, MS 5000.

Instructor / Coordinator: ___________________________ September 20, 2013 (Date)
Dr. Michael D. Johnson

Received: ___________________________ 10/7/13 (Date)
(W Course Coordinator, University Writing Center)

Approvals:

College Dean: ___________________________ (Date)
Dr. M. Katherine Banks

Department Head: ___________________________ September 20, 2013 (Date)
Dr. Reza Langari
DESCRIPTION: A capstone project course utilizing a team approach to the analysis and solutions of manufacturing and mechanical engineering technology problems.

OBJECTIVES:  
1. Communicate effectively through written, oral, and graphic means (Apply).  
2. Demonstrate understanding of curriculum through application in a design project, and synthesize information, creating new designs to meet project sponsor’s needs, while meeting deadlines (Create).  
3. Apply design and project management techniques to an industry related project actively participating on a team in an effective manner (Apply).  
4. Analyze technical problems, identify areas of improvement, and make improvements while considerations of cost (Evaluate).  
5. Act in an ethical manner, keeping sponsor information confidential as warranted, and identify potential social impacts of design results (Apply).  
6. Be able to use research tools to obtain support for project references (Apply).

INSTRUCTOR: Michael D. Johnson, Ph.D.  
midjohnson@tamu.edu  
Office: THOM 118B; Phone: 979-845-4902

PREREQUISITES: ENTC 429

MEETING TIME: Lecture/Lab: MWF from 3:00 – 3:50 P.M. in THOM 112D

OFFICE HOURS: MW 10:45 A.M. – 11:45 A.M. or by appointment.

ATTENDANCE: Attendance is per University Regulations and is required. The first unexcused absence will result in a 5% reduction in the final grade; the second will result in an additional 10% reduction; the third will result in an additional 20% reduction (and failure to pass the course). Work and interviews are not excused absences. Attendance at scheduled team meetings are required as part of the attendance for the course. See page 3 for excused absence rules.

GRADING:  
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<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Grade</th>
<th>% of Points</th>
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<td>Project Proposal</td>
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</tr>
<tr>
<td>• Written Portion (5%)</td>
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<tr>
<td>• Oral Presentation (5%)</td>
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<tr>
<td>Mid-term Report</td>
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<tr>
<td>• Design Review (5%)</td>
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<tr>
<td>• Written Portion (5%)</td>
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<tr>
<td>• Oral Presentation (5%)</td>
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<tr>
<td>Final Report</td>
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<tr>
<td>• Written Portion (15%)</td>
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<tr>
<td>• Oral Presentation (15%)</td>
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<td>Individual Oral Presentations</td>
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<td>C</td>
<td>&gt;69.5</td>
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<td>Individual Memos and Writing Assignments</td>
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<td>Individual Project Log</td>
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<td>D</td>
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<tr>
<td>Individual Contribution to the Project</td>
<td>10%</td>
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</table>
ENTC 422 – Manufacturing and Mechanical Engineering Technology Projects – Fall 2013

COURSE POLICIES:

1. You must complete the writing and oral assignments in order to pass this course.
2. Each student must maintain an individual engineering log to be turned in the last class day (they can and will be spot checked thought the semester). Logs are to be kept in standard log books and must be a chronological record of individual and team activities.
3. Teams must make regular contact with the project sponsor (at least weekly).
4. If you have to travel outside of the Bryan/College Station area for the project, you must see Susan Williams in 117 to fill out the appropriate travel form. These forms must be filled out each time you travel.
5. Team Written Final Report (emailed) is due on the last regular class day.
6. Written (emailed by noon) and Oral Progress Reports will be due each week, except when formal presentations are due. See Class Schedule.
7. All written work (with the exception of the engineering log) will be evaluated for grammar and spelling in addition to grading requirements listed later.
8. Professional behavior and attitudes are required at all times.
9. All emails to external persons must be copied to the course instructor.
10. Individual writing assignments will be made during the semester. These will include: the application for the project assignment, weekly progress memos (different author each week), assessments of team presentations, and a selection of the project teams most likely to succeed and least likely to succeed with justification for the decision. All assignments will be oriented toward constructive evaluations with the intent to improve -- not open ended criticisms. These will serve as part of the individual student grade.
11. The individual grade for each major paper will be dependent upon a section written by each student as indicated below. The best of these or a combination from the team can be incorporated into the team’s paper. The team grade will be based on the report submitted.
12. A different team member (from the memo’s author) will present the weekly progress report each week. The presenter will be identified by the instructor at the time of the presentation.
13. .The use of laptops will not be allowed in class. Participation includes paying attention in class (those who choose to talk, the Battalion, text, etc. will forfeit these points; continued engagement in these activities will result in a reduction in the attendance portion of your grade).
14. As per Student Rule 21 (http://student-rules.tamu.edu/rule21) disruptive behavior that detracts from other students’ ability to pay attention in class will result in removal from the class.

Aggie Honor System: “An Aggie does not lie, cheat or steal 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. See http://student-rules.tamu.edu/rule20.htm and http://www.tamu.edu/aggiehonors/ for more information about Student Rules and the Aggie Honor System.

American with Disabilities (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.

Plagiarism and Intellectual Property: The handouts used in this course are copyrighted. “Handouts” means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless you are expressly granted permission by the copyright holder.

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

If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty.”

Excused Absences
Absences will be excused only per Student Rule 7, which may be found at:

Documentation must be provided from a health care professional in the event of an excused absence due to illness.
<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>1 - 8/26</td>
<td>M  Course Content and Policies</td>
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<tr>
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<td>W  Administrative Items</td>
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<td>F  TBD – Class meets if necessary.</td>
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<tr>
<td>2 - 9/2</td>
<td>M  Tentative Project Presentations</td>
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<td></td>
<td>W  Project Presentations</td>
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<tr>
<td></td>
<td>F  <strong>Project Applications Due</strong></td>
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<tr>
<td>3 - 9/9</td>
<td>M  Team and Instructor Meeting Time</td>
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<tr>
<td></td>
<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<td></td>
<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>4 - 9/16</td>
<td>M  Team and Instructor Meeting Time</td>
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<tr>
<td></td>
<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<td></td>
<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>5 - 9/23</td>
<td>M  <strong>Proposal and Presentation Slides Due – Oral Presentations</strong></td>
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<td>W  Oral Proposal Presentations</td>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>6 - 9/30</td>
<td>M  Team and Instructor Meeting Time</td>
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<tr>
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<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>7 - 10/7</td>
<td>M  Mid-term Design Reviews</td>
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<td>W  Mid-term Design Reviews</td>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>8 - 10/14</td>
<td>M  <strong>Mid-term Report and Presentation Due – Oral Presentations</strong></td>
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<tr>
<td></td>
<td>W  Oral Mid-term Presentations</td>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>9 - 10/21</td>
<td>M  Team and Instructor Meeting Time</td>
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<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>10 - 10/28</td>
<td>M  Team and Instructor Meeting Time</td>
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<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>11 - 11/4</td>
<td>M  Team and Instructor Meeting Time</td>
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<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<tr>
<td>12 - 11/11</td>
<td>M  Team and Instructor Meeting Time</td>
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<td>W  Progress Memos Due - Oral Presentation of Progress Memos</td>
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<tr>
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<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>13 - 11/18</td>
<td>M  Final Design Reviews</td>
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<td></td>
<td>W  Final Design Reviews</td>
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<tr>
<td></td>
<td>F  Team meeting time. Class meets if necessary.</td>
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<tr>
<td>14 - 11/25</td>
<td>M  Team and Instructor Meeting Time</td>
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<tr>
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<td>W  <strong>Final Report Due</strong></td>
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<td></td>
<td>F  Thanksgiving Holiday</td>
</tr>
<tr>
<td>15 - 12/2</td>
<td>M  Oral Presentations of Final Report</td>
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<td></td>
<td>W  Reading Day</td>
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<td>F  Finals</td>
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<tr>
<td>15 - 12/10</td>
<td>T  Oral Presentations of Final Report (10:30 A.M. - 12:30 P.M.)</td>
</tr>
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</table>

1 Topics subject to change.
ENTC 422 – Manufacturing and Mechanical Engineering Technology Projects – Fall 2013

PROJECT APPLICATION
Each student must submit applications for three of the candidate projects. Each application must be 50 to 100 words and submitted by the deadline stated in the Class Schedule. This should include a statement of why you want to work on the project, special skills you bring to the project, and any other people in the course you would rather not work with or don’t think it is possible for you to work with. You must also submit a resume along with your application.

PROJECT PROPOSAL OUTLINE AND CONTENT
Executive Summary
Introduction (individual writing assignment)
Problem Description
Approach (proposed studies) including WBS
Time Chart (Gantt)
Estimated Budget
Personnel Description (who you are and a description of your credentials)

GRADING METHOD – WRITTEN PROPOSAL

| Neatness | 5% |
| Executive Summary | 10% |
| Introduction & Problem Description | 25% |
| Approach (proposed studies) | 35% |
| Time Chart | 10% |
| Estimated Budget | 5% |
| Personnel Description | 5% |
| Use of Visuals | 5% |
| Total | 100% |

GRADING METHOD – TEAM ORAL PRESENTATION

| Presentation | 35% |
| Visuals | 15% |
| Problem Description & Approach (proposed studies) | 45% |
| Team Introduction and Inclusion In Presentation | 5% |
| Total | 100% |

TEAM MID-TERM REPORT CONTENT
Executive Summary
Introduction
Problem Description
Approach (individual writing assignment)
Results to Date (Be Specific)
Plans for Balance of Term

GRADING METHOD – WRITTEN REPORT

| Neatness/Professionalism | 5% |
| Executive Summary | 10% |
| Introduction & Problem Description | 10% |
| Approach | 15% |
| Results To Date | 50% |
| Plans For Balance of Term | 5% |
| Use of Visuals | 5% |
| Total | 100% |

GRADING METHOD – TEAM ORAL PRESENTATION

| Presentation | 35% |
| Visuals | 15% |
| Results To Date | 35% |
| Plans For Balance Of Term | 10% |
| Team Introduction & Inclusion In Presentation | 5% |
| Total | 100% |
TEAM FINAL REPORT CONTENT

Executive Summary
Introduction
Problem Description
Approach
Results (individual writing assignment)
Conclusions
Future Work

GRADING METHOD – FINAL REPORT

<table>
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<th>Component</th>
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<tbody>
<tr>
<td>Neatness</td>
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<tr>
<td>Introduction &amp; Problem Description &amp; Approach</td>
<td>25%</td>
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<tr>
<td>Results</td>
<td>50%</td>
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<tr>
<td>Conclusions &amp; Future Work (reason for lack of completion, if necessary)</td>
<td>10%</td>
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<tr>
<td>Use of Visuals</td>
<td>5%</td>
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<tr>
<td>Success of Project (as determined by instructor)</td>
<td>5%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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GRADING METHOD – TEAM ORAL PRESENTATION

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<td>Team Introductions and Inclusion In Presentation</td>
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<tr>
<td>Total</td>
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</table>
The Manufacturing and Mechanical ET program is designed to provide the student with several skills at the time of graduation. These skills and abilities are stated in the following MMET Program Outcomes:

A Manufacturing and Mechanical Engineering Technology graduate has the following abilities at the time of graduation:

(a) An appropriate mastery of the knowledge, techniques, skills and modern tools of manufacturing and mechanical systems and processes.
(b) An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology.
(c) An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.
(d) An ability to apply creativity in the design of systems, components or processes appropriate to program objectives.
(e) An ability to function effectively on teams.
(f) An ability to identify, analyze and solve technical problems.
(g) An ability to communicate effectively.
(h) A recognition of the need for, and an ability to engage in lifelong learning.
(i) An ability to understand professional, ethical and social responsibilities.
(j) A respect for diversity and a knowledge of contemporary professional, societal and global issues.
(k) A commitment to quality, timeliness, and continuous improvement.
(l) An ability to apply the technologies of engineering materials, manufacturing processes, automation, production operations, quality, statics, dynamics, strength of materials, fluid power or fluid mechanics, thermodynamics, and either electrical power or electronics, and statistics to the solution of manufacturing problems.
(m) An ability to apply with an added technical depth: manufacturing processes, mechanical design, electro-mechanical devices and controls (automation), and production operations.
(n) An ability to apply physics having an emphasis in applied mechanics, plus added technical topics in physics and inorganic chemistry principles related to manufacturing and mechanical systems and processes.
(o) An ability to successfully complete a comprehensive design project related to mechanical or manufacturing fields.

The following table indicates how this course contributes to the achievement of the overall programmatic educational outcomes. Entries with an “H”, “M”, and “L”, refer to high, medium, and low relevancy, respectively.

<table>
<thead>
<tr>
<th>COURSE OBJECTIVE</th>
<th>MMET Program Educational Outcome</th>
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<tbody>
<tr>
<td>1. Communicate effectively through written, oral, and graphic means.</td>
<td>a b c d e f g h i j k l m n o</td>
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<tr>
<td>2. Demonstrate understanding of curriculum through application in a design project, and synthesize information, creating new designs to meet project sponsor's needs, while meeting deadlines.</td>
<td>H H H M H H H</td>
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<td>3. Apply design and project management techniques to an industry related project actively participating on a team in an effective manner.</td>
<td>H H H</td>
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<tr>
<td>4. Analyze technical problems, identify areas of improvement, and make improvements while considerations of cost.</td>
<td>H H</td>
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<td>5. Act in an ethical manner, keeping sponsor information confidential as warranted, and identify potential social impacts of design results.</td>
<td>H</td>
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<td>6. Be able to use research tools to obtain support for project references.</td>
<td>H</td>
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