Texas A&M University

Departmental Request for a New Course
Undergraduate • Graduate • Professional

Submit original form and 2 copies. Attach a course syllabus to each.

1. This request is submitted by the Department of Soil and Crop Sciences

2. Course prefix, number and complete title: AGRO 646 - Advanced Studies in Cotton Fiber Quality and Measurement

3. Course description (not more than 50 words): Advanced studies in cotton fiber quality and its measurement will explore the morphology of cotton fiber growth, the instruments used to determine fiber quality, and the interpretation of quality measurements.

4. Prerequisite(s): None

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

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

7. Has this course been taught as a 489/689? Yes ☐ No ☐ If yes, how many times? 3. Indicate the number of students enrolled for each academic period it was taught. 02C-7; 04C-7; 06C-3; 08C-TBD

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

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography) MS & PhD - SCSC, PLPA, ENTO, and HORT

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

10. Prefix: AGRO 646
    Course #: 030003
    Title (exclude punctuation): Advanced Studies in Cotton Fiber Quality

    Lect. Lab SCH Subject Matter Content Code Admin. Unit Acad. Year FICE Code
    030003 0111020000 26200910 003632

    Do not complete shaded area.

Approval recommended by: J. Smith 4-6-08
Head of Department Date

Chair, College Review Committee 5-18-08
Dean of College Date

Dean of College 6-15-08

Submitted to Coordinating Board by: Date

Director of Academic Support Services Effective Date

To have this form reviewed, please send to Linda F. Lacey, Mail Stop 1265 or fax to 847-8737.

OAR/AS-504

1 of 5 C3
AGRO 646 Syllabus
Advanced Studies in Cotton Fibers

INSTRUCTOR CONTACT INFORMATION

Name: Dr. Eric F. Hequet
E-mail: eric.hequet@ttu.edu
Location: International Textile Center
Phone: 806-747-3790 ext. 515
Fax: 806-747-3796

PREREQUISITES

None

COURSE DESCRIPTION

This course focuses on the examination of the structure of cotton fibers, the meaning and measurement of cotton fiber properties, and the issues related to increasing cotton’s use value as an industrial raw material.

COURSE OBJECTIVES AND / OR LEARNING OUTCOMES

This course provides a fundamental understanding of cotton fiber structure and microstructure, cotton fiber properties, and cotton fiber measurement technologies. Relationships between fiber properties, spinning performances and yarn quality will be detailed.

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

- Demonstrate understanding of the meaning and complexity of cotton fiber properties.
- Demonstrate knowledge of the impacts of fiber properties on the quality of yarns.

COURSE REQUIREMENTS

Course requirements include a midterm and final exam, critical review of selected research paper, topical assignments, and class participation.

Every week selected scientific papers will be distributed to students. These readings are mandatory.

Also, each student will have to make a 30 minute oral presentation. This presentation will be a critical study of a scientific paper supported by a relevant bibliography. The scientific publication will be distributed to the students 4 weeks before the presentation.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily work and class participation</td>
<td>10%</td>
</tr>
<tr>
<td>Paper review</td>
<td>30%</td>
</tr>
<tr>
<td>Mid-term exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final exam</td>
<td>30%</td>
</tr>
</tbody>
</table>
EVALUATION

GRADING SCALE:

A  90 - 100
B  80 - 89
C  70 - 79
D  60 - 69
F  Less than 60

GRADING POLICY:

Grading will be based on the quality of the student's work, initiative in pursuing knowledge, and thoroughness of assignments. Failure to attend class will significantly reduce your grade potential.

A  Outstanding, thorough, creative, and greatly exceeds expectations.
   (90-100 course average)
   A grade of "A" will be awarded for work which far exceeds the minimum expectations of the assignment, not only by doing all that is asked, but by demonstrating superior skill, thoroughness, independence, pursuit in new understandings, creativity, and academic propriety.

B  A disciplined approach with some mastery of the material while showing creativity and exceeding expectations.
   (80-89 course average)
   Grades in the "B" / "B+" range are very good grades. "B" grades indicate above average grasp and mastery of the subject matter, evidenced not only by meeting the basic objectives, but also by showing some initiative in pursuing lines of inquiry and creativity in pursuing new understandings.

C  Satisfactory work that met expectations.
   (70-79 course average)
   Grades in the "C" / "C+" range indicate that the basic objectives of the course have been achieved, and that the student has demonstrated satisfactory mastery of the material. The student met the minimum expectations of the instructor.

D  Below expectations for college-level work.
   (60-69 course average)
   A grade of "D" is assigned to work that is passing, but below average competency for college students. The student receiving a grade of "D" has not exerted a level of effort or expertise expected of the average college student. This level of work is often largely incorrect or minimally thought-out and researched.

F  Lack of command over course material.
   (< 60 course average)
   An "F" is assigned to a failing effort. This sort of work does not meet the minimum expectations of the assignment, demonstrates an unjustifiable lack of command over course material, and a significant absence of effort on the part of the student.
TEXTBOOK AND OTHER MATERIALS NEEDED

Web access.

Mandatory readings and PowerPoint presentation will be posted on the class website.

CLASS EXPECTATIONS

Due to the participatory nature of this class, attendance is expected. Excused absences for class activities (lectures and exams) are subject to TAMU rules and guidelines, please see: http://student-rules.tamu.edu/rule7.htm for details.

COURSE OUTLINE

- **The origins and history of cotton uses**: This will give an overview of the history of cotton production and uses.

- **Cotton, supply and use in the world**: This will give an overview of the world cotton production and use by regions.

- **Cotton production**: This will give an overview on the main species cultivated in the world. The entomological, diseases, physiological and production practices related problems will be discussed in relation with their impact on fiber quality.

- **Harvesting and ginning technologies**: The harvesting technologies and their impact on fiber quality will be discussed. The two main ginning techniques (saw and roller ginning) will be detailed. The links between harvesting techniques – ginning process and fiber quality will be exposed.

- **Fiber structure and microstructure**: This will give an overview on the structure and the microstructure of the cotton fiber including a brief description of the technologies used (X-ray diffraction, scanning electron microscopy, etc...).

- **Fiber properties and measurement technologies**: The main fiber properties will be examined in depth, this will include cotton fiber length, strength, elongation, micronaire, fineness, maturity, neps, color. All the existing and emerging measuring technologies will be discussed, this will include both mechanical and chemical techniques with special emphasis on HVI, AFIS, RapidTester, MANTIS, NIR, etc....

- **Fiber contaminants and measurement technologies**: The main fiber contaminants will be examined, this will include stickiness, seed-coat fragments, leaves, bark, fungi, plastic, rubber, oil, etc. All the existing and emerging
technologies will be discussed; this will include both mechanical and chemical techniques with special emphasis on HVI, AFIS, FCT, H2SD, HPLC.

- **Relation fiber properties to spinning performances and yarn quality**: This will explain effects of the different fiber properties and fiber contaminants on spinning performance and yarn quality for both ring and open-end spinning. A brief instruction on yarn quality measurements will be given.

**Tentative Calendar**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 1    | Introduction to course  
     | Data analysis: minimum requirements  
     | The origin and history of cotton |
| 2    | Fiber structure and microstructure  
     | Maturity and fineness - Part I |
| 3    | Maturity and fineness - Part II |
| 4    | Length, strength and color |
| 5    | Contaminations - Part I |
| 6    | Review |
| 7    | Mid-Term Exam |
| 8    | Contaminations - Part II |
| 9    | Relation fiber properties - yarn quality - Part I |
| 10   | Relation fiber properties - yarn quality - Part II |
| 11   | Harvesting and ginning technologies |
| 12   | Problems + student presentations* |
| 13   | Problems + student presentations* |
| 14   | Final Exam |

(*) One selected scientific paper will be distributed to students. They will be asked to study the paper and review it carefully. The process of review and critic will develop skills of scientific investigation and writing.

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

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

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

**AGGIE HONOR CODE**

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

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

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