INSTRUCTOR CONTACT INFORMATION

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CLASS LOCATION AND TIME:

TBA

PREREQUISITES

None at this time

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

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.

DESIRED LEARNING OUTCOMES

1. Students will demonstrate and apply theoretical knowledge within the field of cotton fiber properties and their relationships with yarn properties.

2. Students will demonstrate the ability to read and analyze technical journals dealing with cotton fiber properties and their relationships with yarn properties.
3. The method used to assess the desired learning outcomes will include: a midterm and final exam, a critical review of a research paper, topical assignments, and class participation.

METHODS OF ASSESSING DESIRED LEARNING OUTCOMES

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

Also, each student will have to make a 15-30 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>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Daily work and class participation</td>
<td>10%</td>
</tr>
<tr>
<td>Paper review</td>
<td>30%</td>
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<tr>
<td>Mid-term exam</td>
<td>30%</td>
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<tr>
<td>Final exam</td>
<td>30%</td>
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GRADING SCALE:

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

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.

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.

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.
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.

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.

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.

I Incomplete

The grade of Incomplete is used to indicate that a substantial portion of the course work has been satisfactorily but not entirely completed as of the end of the semester.

TEXTBOOK AND OTHER MATERIALS NEEDED

Web access.

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

CLASS EXPECTATIONS

1. Students missing an exam with an excused absence may make up the exam within one week of scheduled exam. No Incompletes will be issued for final grades. If student work is missing, averages will be calculated with a zero for missing work.

2. Students must abide by policies in the University Catalog, Student Handbook, and if applicable, program handbook. Academic misconduct will not be tolerated.

3. A student who stops attending class will receive a grade of "F". To receive a "W" grade, the student must officially withdraw from the course by semester Drop/Add date.

ACADEMIC REGULATIONS

Please refer to the Texas Tech University Undergraduate and Graduate Catalog for a complete list of “Academic Regulations”.

Reporting Illness: In case of illness that will require absence from class for more than one week, the student should notify his or her academic dean. The dean’s office will inform the student’s instructors through the departmental office. In case of class absences because of a brief illness, the student should inform the instructor directly. Other information related to illness is found in the Student Handbook and the Residence Halls Handbook.
**Absence Due to Religious Observance:** a student who is absent from class for the observance of a religious holy day, according to the legal definition, will be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence if, not later than the 15th day after the first day of the semester, the student has notified the instructor of each scheduled class that the student will be absent for a religious holy day.

This notification will be in writing and will be delivered by the student personally, with the receipt of the notification acknowledged and dated by the instructor, or by certified mail, return receipt requested, addressed to the instructor.

A student who is excused under this policy must not be penalized for the absence, but the instructor may appropriately respond if the student fails to satisfactorily complete the assignment.

**Absence due to officially approved trips:** Department chairpersons, directors, coaches, or person responsible for a student representing the university on officially approved trips should notify the student's instructors of the departure and return schedule in advance. The instructor so notified must not penalize the student, although the student is responsible for material missed.

**Academic Integrity:** It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. The attempt of students to present as their own work that they have not honestly performed is regarded by the faculty and administration as a serious offense and renders the offenders liable to serious consequences, possibly suspension.

“Scholastic dishonesty” includes, but not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student or the attempt to commit such an act.

**Cheating:** Dishonesty on examinations, quizzes, or homework assignments; illegal possession of examinations, the use of unauthorized notes during an examination or quiz, obtaining information during an examination from the examination paper or otherwise from another student, assisting others to cheat, alteration of grade records, illegal entry to or unauthorized presence in an office are instances of cheating.

**Plagiarism:** Offering the work of another as one’s own, without proper acknowledgement, is plagiarism; therefore any student who fails to give credit for quotations or an essentially identical expression of material taken from books, encyclopedias, magazines, and other reference works, or from the themes, reports, or other writings of a fellow student, is guilty of plagiarism.

**Classroom Conduct:** Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to ensure that all students have an opportunity to gain from time spent in the class, unless otherwise approved by the instructor; students are prohibited from using cellular phones or beepers or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in, minimally, a request to leave class.

1. Please turn off cellular phones and pagers, do not eat or drink in class, talk to neighbors, or engage in any other forms of distraction.

2. Please treat others with courtesy. People engaged in disruptive or rude behavior may be asked to leave the classroom.
3. Suspected cases of cheating or plagiarism will be handled according to the academic regulations of the University. If it is determined that cheating occurred, the student will be dismissed and fail the class.

4. Quizzes, problem sets, and exams may be made up only with a valid excuse, and prior approval of the instructor. Late problem sets will not be accepted because the answers will be discussed in the discussion section when due.

5. "The department, college, and university endorse PL 101-336, the Americans with Disabilities Act of 1990. Students with disabilities are encouraged to inform the faculty member so that any needed accommodations can be provided. All attempts will be made to maintain confidentiality."

6. It is the policy of the university to accommodate the religious observances of students, based on Texas statutes. If there are religious observances that would interfere with student participation in class events, please let the instructor know as soon as possible, so that alternate arrangements may be made.

Students with Disabilities: Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor’s office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services Office in 335 West Hall or 806-742-2405.

Office of the Ombudsman: The office of Ombudsman is available to assist student with any conflict or problem that has to do with being a student Texas Tech University. You can visit the Ombudsman in 202 Student Union Building or call 742-4791.

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, and 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>Date</th>
<th>Topic</th>
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| 1    | 01/15  | Introduction to course  
                Data analysis: minimum requirements  
                The origin and history of cotton |
| 2    | 01/22  | Fiber structure and microstructure  
                Maturity and fineness - Part I |
| 3    | 01/29  | Maturity and fineness - Part II |
| 4    | 02/05  | Length, strength and color |
| 5    | 02/12  | Contaminations - Part I |
| 6    | 02/19  | Review |
| 7    | 02/26  | Mid-Term Exam  
                Contaminations - Part II |
| 8    | 03/05  | Relation fiber properties - yarn quality - Part I |
| 9    | 03/12  | Relation fiber properties - yarn quality - Part II |
| 10   | 03/26  | Relation fiber properties - yarn quality - Part III |
| 11   | 04/02  | Harvesting and ginning technologies |
| 12   | 04/09  | Problems + student presentations* |
| 13   | 04/16  | Problems + student presentations* |
| 14   | 04/23  | Problems + student presentations* |
| 15   | 04/30  | Problems + student presentations* |
| 16   | 05/07  | 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.