

COURSE SYLLABUS

**TXMI 8190 (3 hours credit)
Dyeing Theory
Fall Semester, 2003**

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Course Description:

An advanced study of the theoretical basis of textile dyeing, with emphasis on mathematical descriptions of equilibrium and kinetic sorption processes.

Prerequisites:

Graduate Standing, TXMI 4110/6110, or permission of department

Lecture times:

11:15-12:05 M, W, F

Course Purpose and Objectives:

To develop the student's ability to:

- 1. understand dyeing theory as related to different dye/fiber systems.**
- 2. distinguish among the various sorption isotherms that are found to exist in dyeing processes.**
- 3. understand the major forms of sorption kinetics: infinite bath kinetics, finite bath kinetics, and transitional kinetics.**
- 4. handle the advanced mathematical calculations involved in modeling sorption processes.**

Textbook: None required.

Reading material will consist of library assignments and handouts.

Course Requirements and Evaluation:

Summary and presentation of papers pertaining to dyeing theory	200 points
Analytical Assignments	200 points
Midterm	300 points
Final exam	300 points
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	Total 1000 points

Grading Scale:

900 - 1000	A
800 - 899	B
700 - 799	C
600 - 699	D
0 - 599	F

Discussion of Course Work:

1. **Summaries of Articles.** A two to three page, double-spaced typewritten summary **in your own words** of a journal paper dealing with some aspect of dyeing theory is due *four* times during the semester, as indicated on the calendar. A book should not be used as a source for the summary. The summary should include: Title of paper, author(s), source of paper, publication date, and page numbers. A photostatic copy of the paper should be turned in with the summary. Papers will be graded strictly with regard to quality of summary and correct use of English. In-class presentation of summary is required.
2. **Analytical Assignments.** Mathematical or other analytical problems will be passed out from time to time. Data used in the various problems may be different for each student. A knowledge of SAS, BASIC, or TableCurve will be useful to the student.
3. **Midterm Exam.** Midterm exam will be based on lectures, assigned readings, and assigned analytical problems.
4. **Final Exam.** The final exam will be comprehensive.

POLICY CONCERNING LATE WORK:

A penalty of 10 percent per day will be deducted from the grade made on work turned in late without an acceptable excuse.

Tentative Calendar

- 08/18 Syllabus and Introduction**
- 08/20 Dye Estimation by transmission and reflectance measurements.**
- 08/22 Continuation and Introduction to SAS.**

- 08/25 Equilibrium Studies.**
- 08/27 Equilibrium Studies Continued.**
- 08/29 Equilibrium Studies Continued.**

- 09/01 Labor Day Holiday (no classes)**
- 09/03 SUMMARY #1 DUE. Presentations.**
- 09/05 SUMMARY #1 DUE. Presentations cont.**

- 09/08 Prepare for trip to AATCC ICE (no class)**
- 09/10 Attend AATCC ICE**
- 09/12 Attend AATCC ICE**

- 09/15 Empirical Kinetic Equations**
- 09/17 Empirical Kinetic Equations**
- 09/19 Empirical Kinetic Equations**

- 09/22 Infinite Bath Kinetics**
- 09/24 Infinite Bath Kinetics**
- 09/26 Infinite Bath Kinetics**

- 09/29 Review for Midterm Exam**
- 10/01 Midterm Exam**
- 10/03 Reading Day (no class)**

- 10/06 SUMMARY #2 Due. Presentations.**
- 10/18 SUMMARY #2 Due. Presentations cont.**
- 10/10 Finite Bath Kinetics**

- 10/13 Finite Bath Kinetics**
- 10/15 Transitional Kinetics**
- 10/17 Transitional Kinetics**

- 10/20 Thermodynamic Considerations**
- 10/22 Thermodynamic Considerations**
- 10/24 Thermodynamic Considerations**

10/27 SUMMARY #3 Due. Presentations.
10/29 SUMMARY #3 Due. Presentations cont.
10/31 Fall Break (no classes)

11/03 Applications of Modern Theory
11/05 Applications of Modern Theory
11/07 Applications of Modern Theory

11/10 Applications of Modern Theory
11/12 Applications of Modern Theory
11/14 Applications of Modern Theory

11/17 Special Topics
11/19 Special Topics
11/21 Special Topics

11/24 Reading Day (no class)
11/26 Thanksgiving Holiday (no classes)
11/28 Thanksgiving Holiday (no classes)

12/01 SUMMARY #4 Due. Presentations.
12/03 SUMMARY #4 Due. Presentations cont.
12/06 COMPREHENSIVE TAKE-HOME FINAL PASSED OUT.*

12/08 Work on exam. (no class)

***Note: Each student must sign a statement that he/she has not received help from any *living person* with any question on the exam. The student may consult all sources other than *living beings* for help on the final exam. Any student found in violation of this restriction may be charged with academic dishonesty. Your reputation is much too valuable for you to risk the consequences of cheating. Exam must be turned in by Noon, Wednesday, December 10.**