

## **PTFE 4122 – TEXTILE CHEMISTRY LABORATORY**

**Course Coordinators:** Dr. Haskell Beckham and Dr. Fred Cook

**Prerequisites:** PTFE 2200 and CHEM 1315 or CHEM 2311

**Corequisites:** PTFE 4100 or PTFE 3720

**Catalog Description:** Laboratory course in preparation, coloration, and finishing of textiles.

### **Course Learning Objectives:**

1. Laboratory experience in textile chemistry.
2. Provide a foundation for industrial practice in preparation, coloration, and finishing.

### **Textbook:**

1. Preparation, Coloration, and Finishing of Textiles: Laboratory Manual, W.C. Tincher

### **Topical Outline of Lectures**

1. Introduction: laboratory safety, glassware, calculations, buffer solutions.
2. Measurement and control of pH, buffer solutions
3. Preparation: Desizing, scouring, and bleaching
4. Finishing: optical brighteners, softeners, glycolated resins
5. Spectrophotometry
6. Dyes and fiber classes
7. Dyes and fiber classes
8. Acid dyes on nylon
9. Dyeing of cellulosic fibers
10. Dyeing of fiber blends, polyesters
11. Developing dyeing recipes for nylon carpet
12. Unknown: identify fiber, dye to shade
13. Evaluation
14. Pilot-scale/intermediate-scale use Lab clean up, final

**Course Outcomes:** Specifically, at the end of the course the students will be able to:

1. Ability to communicate technical information in a quantitative and concise manner.
2. Ability to prepare clear and effective written reports to convey technical information.
3. Ability to conduct laboratory experiments in textile chemistry.
4. Ability to use quantitative spectrophotometry to analyze concentration of dyes in solution.
5. Understanding of the functions of auxiliary chemicals in textile wet processing.
6. Understanding of the importance of pH and how to measure it.
7. Understanding of the importance of water hardness and how to measure it.

\* Numbers in Brackets refer to PFE Program Outcomes to which the Course Outcomes relate.

## **Topical Outline of Course**

1. Introduction: laboratory safety, glassware, calculations, buffer solutions.
2. Measurement and control of pH, buffer solutions
3. Preparation: Desizing, scouring, and bleaching
4. Finishing: optical brighteners, softeners, glycolated resins
5. Spectrophotometry
6. Dyes and fiber classes
7. Dyes and fiber classes
8. Acid dyes on nylon
9. Dyeing of cellulosic fibers
10. Dyeing of fiber blends, polyesters
11. Developing dyeing recipes for nylon carpet
12. Unknown: identify fiber, dye to shade
13. Evaluation
14. Pilot-scale/intermediate-scale use lab, clean up, final