ECE 856: PATTERN RECOGNITION  
Spring 2010  
Course Syllabus

Format:
Section 001, 2:00-3:15 TTH, 227 RIGGS.

Instructor:
Dr. R.J. Schalkoff, 334 EIB, rjschal@clemson.edu, (864)-656-5913.

Text:

Attendance:
Not required; probably necessary.

Web Use:
We will use Blackboard. Be sure you can access the course page.
Office Hours:

M,T,W,Th 11:00AM-12:00PM. Others by appointment.

COURSE OUTLINE

I. PART 1: INTRODUCTION AND GENERAL PATTERN RECOGNITION CONCERNS
   A. What is Pattern Recognition (PR)?
   B. Pattern Recognition Approaches
   C. Examples of PR Applications
   D. Pattern Recognition Extensions

II. PART 2: STATISTICAL PATTERN RECOGNITION (StatPR)
   A. Introduction to StatPR
   B. Supervised, Parametric Approaches
   C. Unsupervised Approaches

III. PART 3: SYNTACTIC (STRUCTURAL) PATTERN RECOGNITION (SyntPR)
   A. Introduction to SyntPR
   B. Structural Analysis Using Constraint Satisfaction and Structural Matching
   C. The Formal Language-based Approach to SyntPR
   D. Learning/Training in the Language-based Approach (Grammatical Inference)

IV. PART 4: NEURAL PATTERN RECOGNITION (NeurPR)
   A. Feedforward Networks for Classification
   B. Other Related Neural Approaches and Extensions

1See the text Table of Contents for more detail.
Grading:

Tests(3): 100 %. Each test may have a 'Simulation' component. Simulations and quizzes are individual efforts.

Relevant Topics

Each time this course is offered, I emphasize certain topics which I feel are both timely and of significant interest to the audience. Spring 2010 possibilities include, but are not restricted to:

- Support Vector Machines (SVM).
- Algorithms and architectures for unsupervised learning and related computational concerns leading to parallel implementation.

Additional Remarks:

The Clemson Announcements contains additional information and guidelines on a number of important and related topics, including attendance, special needs and academic integrity. These guidelines are incorporated into ECE 856 by reference.

My teaching philosophy may be summarized in these remarks:

- The class (you) and I are 'in this together' for the session. However, your progress is up to you. Sometimes we can have fun with the material; sometimes work is required. Not everything can be made simple or fun.
- Academic integrity is a serious issue.
- All our interactions should be conducted within a framework of mutual respect.