CSCE 970: Pattern Recognition		**Spring Semester, 1999**
	Course Information	
January 11, 1999		*Handout 1*

Up-to-date information will be kept at `http://www.cse.unl.edu/~sscott/CSCE970`.

Prerequisites: Math 314/814 (Linear Algebra), Stat 380/880 (Probability and Statistics), Math 106 & 107 (Calculus), and CSCE 310 (Data Structures & Algorithms)

Time: 8:30–9:20 Monday, Wednesday, Friday

Classroom: Ferguson 112

Instructor: Stephen D. Scott (sscott@cse), Ferguson 305, 472-6994

Instructor's Office Hours: Monday 9:30–11:00, Thursday 10:30–12:00, and by appointment

Textbook: *Pattern Recognition*, by Sergios Theodoridis and Konstantinos Koutroumbas. Academic Press, 1999.

Course Objectives

In this course you will learn several of the fundamentals and current trends in pattern recognition. Many of the approaches we will cover are applicable to several areas, including OCR, computer-aided diagnosis, speech recognition, and machine vision. The emphasized topics in this course will be classification, feature selection/generation, template matching, clustering, and system evaluation. Within these areas we will focus on approaches rooted in probability, statistics, and machine learning. We will also explore fuzzy approaches if time permits. Syntactic pattern recognition methods (using grammars and automata) will not be covered.

In this course we will follow the book closely, but when necessary I will supplement it with relevant technical papers. For example, when we discuss new methods in machine learning, I will provide copies of papers summarizing the results.

Homework Assignments

There will be 2–4 homework assignments. These assignments will include non-computer-based problems (i.e. theoretical exercises) and computer-based problems (i.e. implementations). The former is to help you comprehend the theory and the latter is to help you understand how the theory is used in practice. No late homework submissions will be accepted. Thus it is better to submit a partially completed homework assignment than a late one. If you have a valid excuse for a late submission (e.g. illness), contact me as soon as possible.

You may consult each other for assistance on the homework, but you must write up your results in your own words. I strongly encourage you to use some document processing package (e.g. LaTeX) to write your homework submissions, and to write as clearly and concisely as possible. *Presentation of your results is as important as the results themselves.* If I cannot understand what you wrote due to poor writing, illegible writing, etc., then I cannot award full credit, even if your answers are correct.

Finally, ensure that all your files (e.g. program code, homework write-ups) are reasonably well-protected. You will be held partially responsible if someone copies your files and submits them to me as homework solutions.

Exams

There will be no exams in this course.

Project

In this course you will do a substantial project. This project can be: (1) a very extensive literature search and summary on a particular topic, (2) a good implementation and evaluation of a known result in pattern recognition, or (3) a small (but nontrivial) amount of original research related to pattern recognition. You may work on these projects individually or in groups of two, but if you work in a group of two, then my expectations will be much higher when I grade your project.

You will summarize your project results in a written report and an oral presentation. If your project involves an implementation, then you will also give a brief demonstration. The oral presentation will be to the entire class at the end of the semester: during dead week (April 26–30), and if necessary, during the week prior to dead week (April 19–23). You will submit your written report to me no later than May 3 (the first day of finals week). Demonstrations will be scheduled individually no later than the first two days of finals week (May 3 and 4).

I will provide a list of possible topics later this semester, but you may propose your own topic as well. *You must receive my approval on your topic before proceeding with your work!* To be a valid topic, it must go beyond the scope of the course. So your project could be on a topic we did not cover in class at all, or could more deeply explore a topic we covered in class.

Transcribing Lectures

This semester each of you will transcribe some of my lectures for the benefit of you and the class (present and future). The number of lectures each of you will cover depends on the size of the class, but will probably not exceed 3. The transcription process requires you to take copious notes of your assigned lectures and write a brief but *detailed* summary of it. You must submit an electronic copy of your summary (formatted similarly to an example I will distribute later) to me no later than two weeks after the lecture. Your submission should include (1) a PostScript version, (2) an ASCII version, and (3) the original source from whatever document processing package you used to generate it. Though I strongly prefer LaTeX for your source (a LaTeX template will be provided to aid with formatting), the source from other document processors is acceptable. The PostScript versions will be posted on the course's web page so the other students can refer to it.

I will assign specific lectures to students only a few weeks in advance, but if there is a particular topic that interests you, you may send me e-mail to request priority on lectures on that topic.

Grading

The homework assignments, project, and lecture transcription duties will be weighted as follows:

homeworks: 40%	project report: 30%	project presentation: 15%	lecture transcription: 10%	subjective: 5%

Your subjective score will be based on my impression of your effort put forth in this course to participate in class, participate out of class, and to learn the course material. Thus actively asking questions and making comments in class and seeing me outside of class will help your grade.

In computing your letter grade I will start with the following base scale:

$\geq 90\% = $ A	80–89% = B	70–79% = C	60–69% = D	$\leq 59\% = $ F

You will receive a "+" with your grade if the last digit of your score is a 5 or higher. I will scale up from this base scale if necessary. So if you get an 85% in this class you are *guaranteed* a B+, but your grade might be higher depending on your performance relative to the rest of the class.

Plagiarism of any kind on the homeworks, project, or lecture transcription will result in a grade of F.

Suggestion Box

At `http://www.cse.unl.edu/~sscott/CSCE970/suggestion-box.shtml` is an anonymous suggestion box for this class. I encourage you to submit comments or suggestions regarding my teaching style, course content, etc. You can submit your name and e-mail address with your suggestion, but it is not required.