Course: Math 299   **Course Title**:   Hypergeometric functions of matrix argument

Instructor: Plamen Koev   **Semester**:   **Time:**
Office: MH 312   **Phone**: 4-5175 (my office) , 4-5100 (Dept.)
Web page: www.math.sjsu.edu/~koev   **Email**: "last name"@math.sjsu.edu
Prerequisites:
Office   Hours:
Midterm:

Text: Ian G. Macdonald, Hypergeomertic Functions I, available from the course webpage.

Preresqusites: Consent of instructor. Linear algebra at the honors level and the calculus series are expected as a minimum.

Learning Objectives: To understand the notion of a function of a matrix argument, Schur Functions, Zonal polynomials, Jack polynomials, spherical functions, hypergeometric functions of a matrix argument and the relationships between them. To understand orthogonality between functions and be able to prove integral formulae for the Jack functions and Hypergeometric functions of a matrix argument.

Grading:.

```
1 midterm                  30%
Final                      50%
Homework and assignments   20%
```

```
The curve is 90/80/70/60 for A/B/C/D (+/-: top/bottom 3% of range).
```

Syllabus:
1. Introduction to hypergeometric functions
2. Schur functions
3. Zonal polynoamials
4. Jack polynomials
5. The orthogonal, unitary, and symplectic groups
6. Multivariate Integrals
7. Integral formulae
8. Gauss-Saalschutz summation
9. Spherical functions
10. Hypergeometric functions with parameter
11. Orthogonality
12. Duality
13. Bessel functions and the Hankel transform
14. Laguerre polynomials

Homework: Homework will be collected regularly. e.

Cheating: Cheating on any quiz, exam, or program may result in an F in the course.

Additional information / requirements please see http://www.sjsu.edu/math/courses/greensheet .