

**CSS 701: Foundations of Applied Mathematics (3CR)**  
**University Center: South Dakota Public Universities & Research Center.**  
**Fall 2009**  
**Thursdays: 6:00-8:50 P.M. Room-185**

**CONTACT INFORMATION:**

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**ABOUT THE COURSE DESCRIPTION AND SOMETHING ELSE**

- The first part of this course will consider a Matrices and Linear Algebra review. For this first part of the course I will base my notes on the book by Francis B. Hildebrand "Methods of Applied Mathematics" Dover (1992).
- For the second part of this course, I am planning to cover Life Tables, Matrix Structured Models, and Sensitivity and Perturbation Analysis of nonlinear Matrix Models. For this part of the course will base my lectures on the book "Applied Mathematical Demography" by N. Keyfitz and H. Caswell (3rd edition) Springer (2005).
- In addition we will review some research papers on these topics.

**CLASS ATTENDANCE:** Class attendance is required.

**GRADING:**

Category	Weight		Scale	
Homework	60 %		90 % -100%	A
Test	20 %		80 % - 89%	B
Presentation	20 %		70 % - 79 %	C
			60 % - 69 %	D
			BELOW 60 %	F

**IMPORTANT DATES:**

- **THURSDAY, SEPTEMBER 10, 2009** is the last day to drop a class without paying in full for the course and nothing showing on your transcript.
- **MONDAY, NOVEMBER 16, 2009** is the last day to withdraw from a class with a "W" showing on your transcript.

**FREEDOM IN LEARNING:**

Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the dean of the college or school that offers the class to initiate a review of the evaluation.

**DISABILITY SERVICES STATEMENT:**

Any student who feels s/he may need academic accommodations or access accommodations based on the impact of a documented disability should contact and register with Disability Services during the first week of class. Disability Services is the official office to assist students through the process of disability verification and coordination of appropriate and reasonable accommodations. Students currently registered with Disability Services must obtain a new accommodation memo each semester.

**Tentative Course Outline/Schedule:** The time spends in each topic is variable. There are many factors that can impact what material is discussed in a class session.

Day	Date	Session No.	Material
Thursday	Sept. 3	1	Introduction, Linear Equations
Thursday	Sept. 10	2	Matrices
Thursday	Sept. 17	3	Linear vector Space
Thursday	Sept. 24	4	Eigen-problem
Thursday	Oct. 1	5	Transformations
Thursday	Oct. 8	6	Test part I + Introduction to Population Without Age
Thursday	Oct. 15	7	Matrix Models Framework
Thursday	Oct. 22	8	Birth and Population Increase from Matrix Population Models
Thursday	Oct. 29	9	Continue
Thursday	Nov. 5	10	Reproductive Value From Matrix Models
Thursday	Nov. 12	11	Structured Population Models
Thursday	Nov. 19	12	Perturbation Analysis of Matrix Models
Thursday	Nov. 26	<b>Holiday</b>	<b>Thanksgiving break</b>
Thursday	Dec. 3	13	Sensitivity Analysis
Thursday	Dec. 10	14	Students presentations
<b>Final Exam</b>			