

MATH 530
INTRODUCTION TO DECISION THEORY
Nicholls State University, Spring 2010

Instructor: Mr. James Chapman
Office: 104 Peltier
Phone: (985)-493-2616
Email: james.chapman@nicholls.edu
Webpage: <http://math.nicholls.edu/chapman>

My office hours are 9:00 AM to 12:00 PM Monday through Thursday. Please contact me (phone, email, or in person) during these times if you have any questions. If you need assistance at a different time, let me know and we will work something out.

Prerequisite: Completion of MATH 401 – Introduction to Probability Theory.

Text: There is no required text. We will use notes posted to Blackboard (blackboard.nicholls.edu) routinely throughout the semester.

Catalog Course Description: Topics in decision theory with applications to real world problems.

Instructor's Course Description: This course is an optional course in the MCCM program at Nicholls State University. This is a unique program designed to prepare students to teach mathematics at the community/technical college level. It is the only program of its kind in the state of Louisiana. However, this program is also useful to secondary teachers (providing additional mathematics content-area knowledge) and to students intending further graduate work. It is a very flexible and content-rich program.

In this course, our primary goal will be to study some of the topics from decision theory. We will begin with a quick review of probability theory (MATH 401) and then survey selected topics from decision theory which shall include the following topics: *Forecasting models*, *decision methods*, *game theory*, and some *optimization theory*.

A few words need to be said about the internet aspect of this course. All assignments, notes, announcements, etc will be posted on Blackboard. All students enrolled in an internet course should have basic computer skills (such as word processing, e-mail, navigating the internet, etc). As an online student, you will be self-paced. Therefore, this requires self-discipline and self-motivation. The problem sets need to be turned in on time. It is the responsibility of the student to notify the instructor of technical and/or personal problems that may interfere with online participation. All students must check their Nicholls e-mail accounts

regularly. E-mail will be our primary means of communication. Just like a typical class, instances of academic dishonesty, such as plagiarism, will not be tolerated.

Hardware and Software Requirements: This course will be conducted via the internet using Blackboard and e-mail. The URL for the university's distance learning website is <http://www.nicholls.edu/distance/> . FAQs about internet courses can be viewed at <http://www.nicholls.edu/distance/faqs/> . A download for minimum computer requirements for taking a course on Blackboard can be found in the last question on the FAQs site given above. A Blackboard tutorial can be viewed at <http://www.nicholls.edu/distance/blackboard-tutorial/> .

Course Outline:

1. Review of Basic Probability
2. Forecasting Models
3. Decision Analysis and Games
4. Classical Optimization Theory

Course Objectives: At the completion of this course, a student will be able to:

- Use the basic tools of probability and statistics in the decision making process.
- Use techniques for forecasting future changes in the value of a desired variable as a function of time.
- Use the techniques of decision making under conditions of certainty, risk, and uncertainty.
- Use some of the basic concepts of game theory.
- Use the concepts of analytic optimization (differential calculus) to solve constrained and unconstrained extremum problems.

Grading Policy: Your course grade will be composed of a problem set grade (50%), an "in-class" midterm exam grade (25%), and a "take-home" final exam grade (25%). The midterm exam will obviously not actually be in-class, since we do not have class. It will be a typical timed exam that students will take at a specified time and place (as opposed to the take-home final exam that you can complete when and where you want during the time you are working on it).

**** Important Notice ****

Distance education students need to choose an approved testing center in their local area and complete a Distance Learning Test Approval Form (located under "Course Documents" on Blackboard) prior to taking the exam. Once the form has been uploaded, I will give you two weeks to

inform me of your choice. That will allow me ample time to contact your designated proctor and approve (or disapprove) the selection.

Disability: If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of your academic accommodations. The Office of Disability Services is located in Peltier Hall, Room 100-A. The phone number is (985) 448-4430 (TDD 449-7002).

Make-up Procedure: To make up a test a student must have a valid written excuse resulting from an emergency situation. Students representing the university in any official capacity will be granted valid excuses and will be allowed to make up the exam.

Academic Grievances: The proper procedure for filing grade appeals or grievances related to academic matters is listed in Section 5 of the *Code of Student Conduct* at the following link:
http://www.nicholls.edu/documents/student_life/code_of_student.pdf .

Continued Learning Following an Extreme Emergency:

In order to make continued learning possible following an extreme emergency, *students are responsible* for:

- Reading regular emergency notifications on the NSU website.
- Knowing how to use and access Blackboard (or University designated electronic delivery system).
- Being familiar with emergency guidelines.
- Evacuate textbooks and other course materials.
- Knowing their Blackboard (or designated system) student login and password.
- Contacting faculty regarding their intentions for completing the course.

Faculty are responsible for:

- Their development in use of Blackboard (or designated) software.
- Having a plan for continuing their courses using only Blackboard and email.
- Continuing their course in whatever way suits the completion of the course best, and being creative in the continuation of these courses.
- Making adjustments or compensations to a student's progress in special programs with labs, clinical sequences or the like only in the immediate semester following the emergency.

The last day to drop this course with a "W" is Wednesday, March 31, 2010.