

Logic and Foundations of Mathematics for Teachers

Instructor: Dr. Ianna West

NICHOLLS
STATE UNIVERSITY



Office: Peltier 106-B

Office Hours: *On-campus* 3M, 4M, 6M, 7M and **Online** T/Th 10:00-11:00 A.M. Instructor will be available for consultation via email or in the Blackboard virtual classroom during online office hours, or by appointment. Also instructor will be available online throughout the day.

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Phone: 985-448-4394

Section: WWW

Required Text and Other Materials: No required text; access to a computer with internet is required.

Suggested reference texts: *Conjecture & Proof An Introduction to Mathematical Thinking* by Diane Driscoll Schwartz; *Mathematical Reasoning Writing and Proof 2nd Edition* by Ted Sundstrom; *Proof, Logic, and Conjecture* by Robert S. Wolf; *A Transition to Advanced Mathematics* by Douglas Smith, Maurice Eggen, and Richard St. Andre, and *Foundations of Higher Mathematics* by Peter Fletcher and C. Wayne Patty.

Prerequisites: MATH 265 (Calculus III) and MATH 358 (Foundations of Mathematics).

Catalog Description: Cornerstone course normally taken in first semester of graduate study. Developing and evaluating arguments and proofs, the use of various types of reasoning, methods of proof, making and investigating conjectures.

Student Outcome Objectives:

Student will be able to:

1. Understand and apply standard mathematical language;
2. Formulate definitions of given mathematical terms;
3. Understand the definition of conjecture and apply this knowledge to form conjectures;
4. Discuss the plausibility of a conjecture without a formal proof;
5. Develop assertions as theorems;
6. Understand the terminology and rules of logic;
7. Apply the rules of logic to construct formal proofs of conjectures and/or theorems;
8. Understand the use of counterexamples and use counterexamples to disprove false conjectures;
9. Demonstrate knowledge of and how to apply assumptions, axioms previously proved theorems and definitions in deductive proofs.
10. Understand and apply various methods of proof including direct proof, proof by contrapositive, proof by contradiction, and mathematical induction.

Course Content and Requirements

Hardware and Software Requirements: The course will be conducted via internet using Blackboard and email. 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/>.

On Campus Meeting Requirements: Students will be required to meet on-campus to take the final exam if he/she lives within a reasonable driving distance of the campus.

Notes: Lecture notes and homework assignments will be posted on Blackboard.

Methods of Evaluation:

Homework: Exercises will be assigned from each section. Students are required to complete all homework assigned to ensure an understanding of the concepts. The homework will be retrieved from Blackboard, and then uploaded back on to Blackboard when completed. Instructions for submission will be given later. Homework assignments will be graded and feedback will be uploaded to Blackboard where the student may access his or her feedback.

Exam: There will be a final exam worth 40% of the total grade. Date of exam will be announced. Students who live out-of-state, or students who do not live within a reasonable driving distance to the Nicholls' campus, may request an alternative location (an approved testing center) to take the exam. Arrangements need to be made by the student in advance. Therefore inform the instructor at the beginning of the semester if you cannot take the exam on-campus.

Distance Learning Form: A copy of the distance learning form is attached to the syllabus. This form is only for students who will take the exam off-campus. The form will be sent by the instructor to the approved testing center approximately a week before the exam and is to be filled out by the test administrator and returned to the instructor before the day of the test

Grade

Grade will be calculated on a ten point grading scale 90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F.

<i>Homework</i>	60%
<i>Final Exam</i>	40%

*****Distribution of points may change during the semester*****

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

Behavioral Policy: Students must **at no time** be disrespectful toward the instructor. Students must behave in a professional manner at all times. Failure to act in an appropriate manner will not be tolerated and will be handled according to the guidelines outlined in the *Code of Student Conduct*.

Attendance Policy: Participation in activities is required where an electronic record which clearly indicates time and date activity was submitted. For financial aid purposes, student must complete at least one activity , which is equivalent to having attended a class at least once.

Academic Honesty Policy: Cheating will not be tolerated. Sanctions for academic cheating, plagiarism, and forgery of academic documents including signing another's name (Sec 1.9) are those outlined in the *Code of Student Conduct*.

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* and at the following link:

http://www.nicholls.edu/documents/student_life/code_of_conduct.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;
- evacuating 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 the use of the 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.

Americans with Disabilities Act: If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of our 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).

The last day to drop this course with a "W" is Friday, April 3, 2009.

Division of Mathematics / Nicholls State University
Distance Learning Test Administration
Procedure and Approval Form

Please return the completed form to the instructor.

Students taking examinations via distance learning are required to make arrangements with an authorized testing institution. These accommodations are to be communicated to the instructor of the distance learning course.

Please note the following.

- 1. The testing center / test administrator shall have computer / e-mail access for the student during the examination period in the event of online communication by the instructor.**
- 2. The testing center shall have telephone** access for the student during the examination period in the event of oral communication by the instructor. Some instructors wish to speak with the student and the test administrator at the commencement of the testing period.**
- 3. At the end of the testing period, the test shall be signed by both the student and the test administrator.**
- 4. The student shall present photo identification before gaining access to the examination.**
- 5. At the discretion of the administrator, unusual disruptions of the testing period shall be documented and communicated to the instructor.**

Name of Student: _____ Course: _____

Instructor: _____

E-mail of Instructor: _____

Date of Exam: _____ Time of Exam: _____ Eastern Central

Mountain Pacific

Institution Administering Test: _____

Institution Website: _____

Test Administrator: _____

Department: _____

Position/Title: _____ (This will be verified by the Nicholls Math Dept.)

E-mail Address: _____ (Must be available during exam)

Administrator's Phone: _____

**Exam Phone (if different from above): _____ (Must be available during exam)