

Fayetteville State University
COLLEGE OF ARTS AND SCIENCES
Department of Mathematics and Computer Science
MATH 481-01 Introduction to Topology
Fall 2011

“In case FSU must close for an emergency during the semester, instruction will continue using Blackboard.”

I. Locator Information:

Instructor: Dr. Xin Tang

Course # and Name: Math 481 Introduction to Topology

Semester Credit Hours: 3 hours

Day and Time Class Meets: _____

Total Contact Hours for Class: _____

Office Location: Lyons 120

Office hours: _____

Office Phone: 910-672-2206

Email address: xtang@uncfsu.edu

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (studentid@broncos.uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail. Rules and regulations governing the use of FSU email may be found at <http://www.uncfsu.edu/policy/general/FSUE-mailFINAL>

II. Course Description: Mathematics 481-Introduction to Topology is a study of topics in the field of point set topology, including general topological spaces, metric spaces, and various topological properties. **PREREQUISITE: MATH 412.**

III. Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability, please contact the Center for Personal Development in the Spaulding Building, Room 155 (1stFloor); 910-672-1203.

IV. Textbook: Baker, Crump W. Introduction to Topology, Krieger Publishing Company, Malabar, Florida 1997.

V. Student Learning Outcomes

Upon completion of this course, students will be able to:

- Show a basic understanding of Logic and Set Theory
- Demonstrate a familiarity with Topological Spaces
- Demonstrate an understanding the basic principles of Metric Spaces
- Demonstrate the ability to apply concepts of Continuous Functions
- Demonstrate knowledge of Connected Spaces
- Demonstrate knowledge of Compact Spaces
- Demonstrate knowledge of Product Spaces
- Demonstrate knowledge of Separation Axioms

VI. Course Requirements and Evaluation Criteria

Evaluation in the course shall be using continuous assessment. The mode of assessment would include homework assignments, chapter exams, class attendance and participation, and final examination. The grading scale for determining the course grade and weights given to various activities are given below.

- a. A = 90-100% B = 80-89% C=70-79% D=60-69% F=Below 60%
- b. Students are only allowed to miss no more than 3 classes for acceptable reasons.
- c. Homework: 25 points;
Tests (3): 45 points;
Final Exam: 20 points;
Class participation: 10 pts.
- d. **No make-up exams or late assignments will be accepted without the instructor's prior permission.**

GENERAL REQUIREMENTS:

- The student is expected to pre-study each lesson in advance, complete all assignments, and spend adequate time on class work to insure success in the course. At least two hours of study is expected for each class hour.
- It is the responsibility of the student to avail himself/herself at all class meetings, and obtain additional help as needed. Consult the University Catalogue on Class Attendance Policy.
- Students are expected to enter the classroom on time and remain until the class ends. **Late arrivals and early departures without appropriate excuses will not be tolerated.**
- Each student is encouraged to participate in class discussion for a clearer understanding and meet with the instructor when additional assistance is needed.

VII. Academic Support Resources – Additional course information or announcement will be posted on [Blackboard](#).

VIII. Course Outline and Assignments

The following Course Outline and Assignments are subject to change if needed.

Sections	Topics	Homework
1.1	Topology	
1.2	Sets	1, 2, 4, 14
1.3	Extended set operations	1, 2, 6, 11
1.4	Functions	4, 5, 6, 8, 9
1.5	Images and inverse images of sets	1, 2, 6, 7
2.1	Open subsets of the real numbers	1.(a, b, c, d, e, i, j), 3, 6, 8
2.2	Topological spaces	1, 2, 10
2.3	Closed sets and closure	1, 3, 11, 13
2.4	Limit points, interior points, exterior points, boundary, more on closure	1, 2, 4, 6, 10
2.5	Basic open sets	3, 5, 7, 9
	Exam 1	
3.1	Subspaces	4, 6, 8, 13
3.2	Continuity	3, 4
3.3	Homeomorphisms	2, 3, 7
3.4	The topology of \mathbb{R}^n	

4.1	Products of two Topological spaces	1, 2, 6
4.2	Finite products and projections	2, 4
4.4	Continuity of algebraic operations on \mathbb{R}	3, 4
	Exam 2	
5.1	Connected spaces	1, 2, 3
5.2	Connected subspaces and continuous images of connected spaces	1, 2, 3
5.3	Finite product of connected spaces	1, 2
6.1	Compact spaces	6, 7, 11
6.2	Properties of compact spaces	4, 7
	Exam 3	
7.1	$T_{\{0\}}, T_{\{1\}}, T_{\{2\}}$	2, 3
7.2	Regular spaces	2, 3
7.3	Normal spaces	2, 3
8.1	The metric Topology	1, 4
8.2	Products of metric spaces	5, 13
8.3	Sequences	1, 3
8.4	Complete metric spaces	1, 5
	Final exam	

IX. Teaching Strategies:

The majority of the material of the course will be given in lecture format. There is a short review before and after each lecture. Student discussions, cooperative learning groups will be strongly encouraged.

X. Bibliography:

Cain, George L. Introduction to General Topology. Reading, MA: Addison-Wesley Publ. Co., 1994.

Goodman, Sue E. Beginning Topology. Belmont, CA: Thompson Brooks/Cole, 2005.

Munkres, James. Topology. Englewood Cliffs, NJ: Prentice-Hall, Inc., 2000.

Roseman, Dennis. Elementary Topology. Upper Saddle River, NJ: Prentice-Hall, Inc., 1999.

Sieradski, Allan J. An Introduction to Topology and Homotopy. Boston: PWS-KENT Publ. Co., 1992.