SOUTHERN UNIVERSITY and A&M COLLEGE
DEPARTMENT OF MATHEMATICS

MATH 492
INTRODUCTION TO POINT SET TOPOLOGY

Course Description: An introductory course in general topology, Mathematics 492 introduces the students to various types of topological spaces. This introduction includes compact spaces, locally compact spaces, and connected spaces, locally connected spaces, Hausdoff Spaces, normal spaces and various topological properties and theorems including The Tichnoff Theorem. Prerequisite: Consent of the instructor.

Instructor's Emphasis: The course aims to foster genuine knowledge of course content**,** the development of key concepts, and the ability to think critically and solve problems. This course should be taken after the normal calculus sequence. Hence a purpose of the course is to extend the students' knowledge of the Calculus by introducing them to additional topics in mathematics, which make use of the concepts, learned in calculus. The instructor will emphasis problem solving, critical thinking and communicating, both writing and orally. In addition, the instructor will emphasis solutions to problems numerically, algebraically, graphically and several applications The instructor will also provide the students with essential concepts and skills in differential equations which is needed to successfully complete their studies in chemistry, engineering, physic, computer science and other areas of the natural sciences.

Intended Audience: This course is designed for students in the mathematics, mathematics education and other areas of the natural sciences.

Course Credit 3.0

Prerequisites: Consent of the instructor.

Textbook: *A student Oriented Approach to Topology*, Horace Smith, Infinity Publishing COMPANY, 2003

General Goals:

1. To use logical and critical thinking to master the course content.

2. To reason within the framework of definitions, axioms, examples and theorems to solve problems, give examples, develop new theorems and present these results to the entire class.

Learning Outcomes:

1. When asked, the students will define and give examples of terms relative to the course content.

2. When asked, the students will recall and use formulas from integral and differential calculus.

3. When ask, the student will draw figures to illustrate the meaning of the definitions or theorems.

4. When ask, the student will explain and give examples of theorems.

5. When ask, the student will solve problems relative to the content of the course and explain the result to the entire class.

6. When ask, the student will solve specific problems from resent mathematical publications, relative to the content of the course (with the help and supervision of the professor).

7. When ask, the student will solve and present specific problems from the text under the supervision of the professor.

8. When ask, the student will do research and write a research paper on a topic in general topology approver by the professor of the course.

9. When ask, the student will make a report on a recently published article or material on topology in national journal.

Assessment Measures:

1. Instructor will create examinations, quizzes and homework
2. The student will solve problems on the choke board with the help and supervision of the instructor

Course Content:

Chapter 1. Introduction to set Theory

1.1 Fundamental Concepts

1.2 Collection of Sets

1.3 Cartesian Product

1.4. Function

Chapter 2 **Topologies, Topological Spaces and Mapping**

2.1. Introduction

2.2. Definitions and Examples of Topological Spaces

2.3 Basis and Sub basis

2.4 Interior, Boundary, Closure and Limits Points

2.5 Continuity

2.6 Product Spaces

2.7 Subspaces

Chapter 3. **Various Types of Topological Spaces**

3.1 Separation Properties

3.2 Connected Spaces

3.3 Locally Connected Spaces

3.4 Compact Spaces

3.5 Locally Compact Spaces

3.6 Path Connected Spaces

3.7 Locally Path connected Spaces

3.8 Open and Closed Sets in Topological Spaces

3.9 The product of topological spaces

Chapter 4. The Tichnoff Theorem

Course Expectations and Student Supplements:

1. EXPECTASTIONS
Students are expected to have the skills prerequisite for the course.

2. OTHER RESOURCES
a) The use of the library is required of additional research.
b) Individual help by the professor during the office hours

3. CLASS ATTENDANCE
Regular and punctual attendance is expected. Excessive absences and tardiness will not be tolerated. The student is responsible for keeping up with course work, whether or not an absence is excused. When a student receives THREE or more absences, his/her academic standing in the course may be compromised, extenuating circumstances may be considered.

4. EXITING MATHEMATICS 370
To exist math 492 the and receive credit in the area of the sciences or engineering the student must have a semester grade of "C" or better.

The teacher will administer the FINAL EXAMINATION according to the time.

Academic Dishonesty: Adhere to honesty and integrity in work submitted for credit in this course and adheres to SUBR's Code of Conduct. (Refer to current Catalog.)

Disability Statement: Students that are considered as having a disability are to provide the professor with a letter from the Department of Special Education stating the appropriate accommodations required of this course. If you have a documented disability, then please discuss it with personnel at 771-3950 in Room 125 of Blanks Hall.

Suggested Or Required Reading: See professor.

Grading Policy: See professor.