MATH 5390 – Selected Topics in Mathematics: Topology
Fall 2007

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Course Web Page: http://math.uttyl.edu/cmann/classes/5390/
Required Text: None (for now)

Description of Course

point-set topology, the fundamental group, homotopy theory, Seifert-Van Kampen theorem, cubical singular homology, Mayer-Vietoris exact sequence, homology of CW-complexes

Grades

Your grade will be based on exams and homework. The exams will constitute 70% of your grade and the homework 30%. There will be a midterm exam near the middle of the semester and a final exam at the end.

Homework

We learn by doing, so I will regularly assign and collect homework assignments. Student collaboration on the homework is allowed and encouraged.

Disability Statement

If you have a disability, including a learning disability, for which you request disability support services and/or accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: http://www.uttyler.edu/disabilityservices.

Social Security Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number.

Note Regarding Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor by the second class meeting of such absences.

Grade Replacement

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grape point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-08 Catalog, p. 35)

Course Outline

1. **Point-Set Topology Review**
   (a) Cardinality
   (b) Topological Spaces
   (c) Metric Spaces
   (d) Compactness
   (e) Connectedness
   (f) Continuous Functions
   (g) Homeomorphism
   (h) Product and Quotient Spaces
2. **Classification of Surfaces**
   (a) n-Manifolds
   (b) Orientable and Nonorientable Manifolds
   (c) Classification Theorem
   (d) Euler Characteristic
3. **Homotopy and the Fundamental Group**
   (a) Homotopy, Path Homotopy
   (b) Definition of Fundamental Group
   (c) Lifting Properties, Covering Spaces
   (d) Seifert and Van Kampen Theorem
4. **Homology Theory**
   (a) Cubical Singular Homology Groups
   (b) Main Properties of Homology Groups
   (c) The Mayer Vietoris Exact Sequence
   (d) Computing Homology Groups
   (e) Homology of CW-Complexes