

MTH 304 - METRIC SPACES AND TOPOLOGY

SEMESTER 2, 2016-17

December 28, 2016

General information

Classroom: L6, LHC

Schedule: Mon, Wed & Thu: 11:00 - 11:55 AM

Webpage: http://home.iiserb.ac.in/~kashyap/MTH_304/mth304.html

Contact information:

Instructor: Dr. Kashyap Rajeevsarathy

Office: Academic Building 1, Room 314

Office hours: Fri, 10:00 - 11:00 AM

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Topics

- Definition, open sets, closed sets, limit points, convergence, completeness, Baires theorem, continuity, spaces of continuous functions
- Compactness, sequential compactness, compact metric spaces, compact-open topology, Ascolis theorem
- Completeness, space filling curve, nowhere differentiable functions
- Definition and examples of topology, base, subbase, weaker and stronger topology

- Order topology, subspace topology, product and box topology
- Continuity, homeomorphisms, quotient topology
- Compact spaces, examples, Tychonoffs theorem and locally compact spaces, limit point compactness, local compactness
- Connected spaces, components, path components, totally disconnected spaces, locally connected spaces, examples
- Countability axioms, separation axioms, completely regular and normal spaces, Urysohns lemma, Tietze extension theorem, Urysohn embedding theorem, Stone-Cech compactification

Suggested books

1. J. R. Munkres, *Topology (2nd Edn)*, Dorling Kindersley, 2006.
2. G. F. Simmons, *Introduction to Topology and Modern Analysis*, Tata McGraw Hill, 2008.

Homework policy

- Homework assignments will be due every other week. The problems to be turned in and the due dates will be posted on the course webpage. So it is your responsibility to regularly check the course webpage for any updates.
- If you must miss the class on a due date, try turning in your assignment in advance or have some one else turn it in for you.
- Problems written should be legible and must clearly indicate the steps used to arrive at the solution.

Quiz and exam policy

- Up to two quizzes may be administered during the course of the semester - one before the midterm and another before the final. The syllabus for the quizzes will be announced in class.

- The schedule for the midterm and final exams will be as per the academic calendar.
- The topics for the midterm exam will be announced in class in due course. However, the final exam will be comprehensive with more emphasis on topics that will be discussed after the midterm exam.
- No books, notes, or electronic devices of any kind may be used during exams.
- When graded exams or quizzes are returned, please check them carefully for any grading errors. All grading issues should be brought to my attention as soon as possible. Note that your scores are not renegotiable after the final grades are submitted.
- Do not make travel plans that might prevent you from taking any scheduled exam or quiz. If you have a verifiable reason why you cannot be present at an exam, you must contact me in advance to make an alternative arrangement.

Grading Scheme:

A total of 100 percentage points will be distributed as follows:

- Homework - 20 %
- Midterm - 30 %
- Final Exam - 50 %