MAS331 (3:2:4) Spring, 2015	**Topology**	MW 1:00–2:30PM Room E11-201

Instructor: Professor Ki Hyoung Ko
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TA: • Mr. Jeong, Seong Gu
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• Mr. Jung, Hongtaek
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Course Description: In this course you learn the classical part of topology, usually called point-set topology or general topology. This field is explicitly developed in the ninetheenth century in order to clarify many ideas in analysis. We will try to cover most of Part I in the main textbook. The topics in the rest of the book are taught in the graduate courses MAS 531.

Textbook:

- James R. Munkres, *Topology, 2nd Edition*, Prentice-Hall, 2000.
- Lecture notes can be downloaded from the course web site at klms.kaist.ac.kr.

Syllabus:

Week 1. Background in Set Theory–cardinality, ordinality, the axiom of choice and variants
Week 2. Metric spaces and continuous functions, the real line as a completion.
Week 3. Topological spaces, interior and closure, Bases and subbases, continuity
Week 4. Subspace topology, Metric topology, Product topology, quotient topology
Week 5. Connectedness, Intermediate value theorem, Path connectedness
Week 6. Axioms of separation and countability, Urysohn's lemma
Week 7. Compact spaces, Tychonoff theorem, other forms of compactness
Week 8. Midterm Exam
Week 9. Separable spaces, characterization of compact spaces
Week 10. Urysohn's metrization theorem, Compatification
Week 11. Sequence of functions, Tietze extension theorem
Week 12. Function spaces
Week 13. Ascoli's and Arzela's theorem, Baire space
Week 14. Paracompact spaces, partition of unity
Week 15. Covering dimension

Homework: Homework problems will be assigned every week. You do not have to hand in your homework and instead you practice with them to prepare for quizzes and exams. In recitation sessions, some of homework problems will be explained by teaching assistants or you may ask questions.

Recitation and Quiz: There will be a recitation class on each week except the first week. We will announce the detail about when and where at the course site at KLMS. Quizzes will be given in recitation classes to check whether you are doing homework. Each quiz consists of 3 problems, two of which are little or not modified from homework problems.

Course Grade: There will be 12 quizzes and a 3-hour final exam. Neither makeup quizzes nor a makeup final will be given under any circumstance. Instead you may drop two worst quiz scores. If you miss the final exam, you automatically fail the course. Your course grade consists of quizzes 50%, final exam 40%, and attendance 10%. Your course grade will be lowered by one step if you miss more than two weeks' worth of classes after the add-drop period.