Point Set Topology
MATH 7411

Syllabus

- ✓ **Review of Set Theory:** Family of sets, Cartesian product, power set, equivalence relations, ordinal and cardinal numbers.
- ✓ **Topological spaces:** Elementary concepts, continuous maps, homeomorphisms, product topology, weak topologies, connectedness and compactness. Metric spaces.
- ✓ **Countability and Separation Axioms**: The countability axioms, the separation axioms, normal spaces, the Uryshon characterization of normal spaces, and the Tietze extension theorem.
- ✓ **The Tychonoff Theorem.**
- ✓ **Metrization Theorems**: The Uryshon metrization theorem.
- ✓ **Function Spaces**: Compactness in metric spaces, pointwise and compact convergence, and the Ascoli's theorem.
- ✓ **Baire spaces**.
- ✓ **Algebraic Topology**: The fundamental group, covering spaces, the fundamental theorem of algebra, deformation retracts and the homotopy type, fundamental groups of some surfaces.
- ✓ **Applications**: Knot theory as time allows

Book recommended: "Topology" by James Munkres (Prentice Hall).
Evaluation: The final grade shall be based on homework scores, class participation and presentations. First day of classes: August 27. Last day of classes: October 12. Labor Day (no classes): September 3.