DE LA SALLE UNIVERSITY – MANILA
COLLEGE OF SCIENCE
Mathematics Department

SYLLABUS

COURSE CODE	MTH633M/D
COURSE TITLE	General Topology
CLASS DAY & TIME	
ROOM	
NAME OF FACULTY	
COURSE CREDIT	3 Units
CONTACT NO. (DEPT)	(02) 536-0270, (02) 524-4611 loc. 420/413
TERM/SCHOOL YEAR	

COURSE DESCRIPTION
An introductory course in general topology which discusses well-known topological spaces, metric spaces, bases and subbases, continuous functions and homeomorphisms, product and quotient spaces, connectedness, compactness and separability.

COURSE OBJECTIVES
The students will:
1. Be aware of the fact that topology provides the foundations for studying other areas of mathematics such as algebra, geometry, analysis, category theory and many others..
2. Understand fundamental topology concepts and acquire proving, reasoning and analytic skills that can be used for other courses.
3. Exhibit values like:
   - cooperation through group study;
   - honesty by claiming credit only for the work he has done;
   - zeal and seriousness of intent to learn by participating actively in class discussion, doing his homework regularly and consulting his mentor;
   - patience, perseverance and diligence by solving assigned exercises completely including the difficult ones;
   - faith by doing what is right and giving his best in performing any assigned task;
   - show concern for the community through sharing of know-how and resources during group discussion;
   - self-reliance by being able to solve problems independently.

Topic/Subtopic	Learning Strategies/ Activities	Week/Meeting
1. Topological Spaces 1.1 Examples of topological spaces	Lecture-Discussions Problem Solving	Weeks 1-2

Topic/Subtopic	Learning Strategies/ Activities	Week/Meeting
1.2 Discrete and Indiscrete Spaces 1.3 Finite-Complement and Countable Complement Topologies 1.4 Finer and Coarser Topologies 1.5 Closed and Open Sets		
2. The Euclidean Topology 2.1 The Euclidean Topology on the Real line 2.2 The Euclidean Topology in R^n 2.3 Basis for a Topology 2.4 Subbasis for a Topology	Lecture-Discussions Problem Solving Use of MS Excel and/or Mathematica (Wolfram Alpha)	Weeks 2-3
3. Limits Points 3.1 Limit Points and Closure 3.2 Neighborhoods 3.2 Connectedness and Separability	Lecture-Discussions Problem Solving	Weeks 4-5
 Long Test No. 1		**Weeks 6**
4. Continuous Functions and Homemorphisms 4.1 Continuous Functions 4.2 Intermediate Value Theorem 4.3 Subspaces 4.4 Homeomorphisms	Lecture-Discussions Individual/Group Reporting	Weeks 7
5. Separation Axioms 5.1 T_0 and T_1 spaces 5.2 Hausdorff Spaces 5.3 T_3 Spaces	Lecture-Discussions Individual/Group Reporting	Week 8
6. Metric Spaces 6.1 Metrics and Metric Spaces 6.2 Convergence of Sequences 6.3 Completeness 6.4 Baire Spaces	Lecture-Discussions Individual/Group Reporting	Weeks 8-9
Long Test No. 2		Week 10
7. Compactness 7.1 Open Covers and Subcovers 7.2 Compact Spaces 7.3 Heine-Borel Theorem 7.4 Local Compactness	Lecture-Discussions Individual/Group Reporting	Weeks 10-11
8. Product Topology 8.1 Finite Products 8.2 Projections 8.3 Urysohn's Lemma 8.4 General Products 8.5 Tychonoff's Theorem	Lecture-Discussions Individual/Group Reporting	Week 12
9. Quotient Spaces	Lecture-Discussions Individual/Group Reporting	Week 13
FINAL EXAMINATION		Week 14

COURSE REQUIREMENTS

- 2 Long Tests   50%
- Final Examination   30%
- Problem Sets   20%

SOURCES

BOOKS

- Willard, S., General Topology, New York: Dover Publications, 2004.
- Hun, K.P, Van Mill, J and Simon, P., Recent Progress in General Topology, Springer-Link, 2014.
- Encyclopedia of General Topology, Amstredam: Elsevier/North-Holland, 2004.
- Koshi, J.D., Introduction to General Topology, New York: Wiley, 1983.
- Diximer, Jacques, General Topology, New York: Springer/Verlag, 1983.

ONLINE MATERIALS

- www.math.ed.uk/~aar/papers/munkres2.pdf (PDF copy of Topology by James Munkres)
- www.topologywithouttears.net E-book: Morris, Sidney, Topology Without Tears, 2014 edition

Noted by:

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