

Studies on the Duality of Abelian Groups
 A Seminar Course for the Lagniappe Semester
 Summer 2006 at the Department of Mathematics
 Tulane University

We tentatively plan a combined project seminar and course on the duality and character theory of topological abelian groups and I propose that we determine a more precise ‘modus operandi’ when we meet in the week following May 15, 2006.

For some preliminary reading it might not be a bad idea to look up my course notes for an introductory course on compact groups being taught at Darmstadt Institute of Technology in April and May 2006. They are accessible and downloadable from the website

<http://www.mathematik.tu-darmstadt.de/lehmaterial/SS2006/CompGroups/>

The course notes are named `compgr****.pdf` where `****` is indicative of the creation date. The files `transp**.pdf` contain transparencies with summaries projected at the beginning of classes; the files `ex**.pdf` contain lab- and exercise notes.

The website further contains lecture notes of a course on pointset topology `top.pdf` and an introductory course on topological groups `topgr.pdf`. These may be somewhat relevant to the project in lieu of background books.

One source book for the project is

Hofmann, K. H., and S. A. Morris, *The Structure of Compact Groups*, de Gruyter Verlag, Berlin, 1998, xvii+834pp.

Second Completely Revised, Corrected and Augmented Edition 2006, xviii+860pp. To appear at de Gruyter Verlag, Berlin.

I propose that the Tulane Copy be placed on a reserve shelf in the library.

Some Additional Literature on General Topological Groups

Nicholas Bourbaki, *Topologie générale*, Chap. 4: Groupes topologiques, Hermann Paris, 1971,

Hewith E., and K. A. Ross, *Abstract Harmonic Analysis I and II*, Springer Verlag, Berlin etc. 1963, viii+519 pp., respectively, 1970, *ibidem*, ix + 771 pp.

Hofmann, K. H., *Introduction to Topological Groups*, Lecture Notes, TU Darmstadt, 2006, pdf-file, 57 pp.

Pontryagin, L. S., Topologische Gruppen, Teile 1 und 2, B. G. Teubner, Leipzig, 1957, 263 S., bzw. 1958, 308 S. (Deutsche Übersetzung der zweiten Auflage des russischen Originals, 1954)

Some Introductory Literature into Topology

Some background knowledge in general topology is desirable in a seminar on topological abelian groups. We shall make an effort to provide what we need; the introductory Tulane course on Topology is a guidance. A list of reading material on general topology (taken from the background material of my course on topology) is reproduced in the following:

Nicholas Bourbaki, Topologie générale, Chap. 1-4, Hermann Paris, 1971, Chap. 5-10, *ibid.*, 1974.

Ryszard Engelking, General Topology. Second edition. Sigma Series in Pure Mathematics, 6. Heldermann Verlag, Berlin, 1989, viii+529 pp.

Hofmann, K. H., Introduction to Topology, Lecture Notes of a Course taught in the summer of 2005 at TU Darmstadt, pdf-file on the website for this course
<http://www.mathematik.tu-darmstadt.de/lehmaterial/>

[SS2006/CompGroups/](#).

John L. Kelly, General Topology, D. Van Nostrand Company, Inc., Princeton, 1955, xiv+298 pp.

Kenneth Kunen, Set Theory, North-Holland Publishing Company, Amsterdam, 1980.

Kenneth Kunen and J. Vaughan, eds, Handbook of Set-theoretic Topology, North-Holland Publishing Company, Amsterdam, 1984.

Sidney A. Morris, Topology without Tears, 2003,
<http://uob-community.ballarat.edu.au/~sidmorris/topology.htm>
Get password for downloading from
s.morris@ballarat.edu.au

Lynn A. Steen and J. Arthur Seebach, Jr., Counterexamples in Topology, Holt, Rinehart and Winston, Inc. New York etc., 1970, xiii+210

Steven Vickers, Topology via Logic, Cambridge University Press 1990, xiii+200 pp.

Bourbaki is a very systematic source which remains valid; the original is in French. Kelley's book is a classic in the English language which has been very influential in the teaching of general topology in the second half of the last century.

Engelking's book is up-to-date and encyclopedic.

Sidney Morris' book is on the web; he has been contacted by me and will be glad to give the required password for the downloading of his material to the students of this course. This is a very gentle introduction to topology.

My Office is Gibson Hall G320. I plan to be present most of the time during the Lagniappe Semester.

Karl H. Hofmann
Adjunct Professor of Mathematics, Tulane University