

Introduction to Topological Groups
Selected Literature

Source Book for this Course

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.

It will come as not surprise that I advertise Hofmann and Morris; the earlier chapters arose from courses I taught at various universities, including at TU Darmstadt. The book is available through bookshops, but due to its length it is not cheap. Also, a second revised edition will appear in July of 2006.

Some Literature on General Topological Groups

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

Hewitt 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)

These are general sources on topological groups; the list is of course incomplete. Pontryagin is a classical text and is still excellent, but not necessarily introductory. Another classic with a strong analysis flavor is Hewitt and Ross, and it remains modern today. Bourbaki is very elegant and general, but hardly suitable as an introduction for the beginner.

A book on a pro-Lie groups and locally compact groups that Morris and I have written in the last couple of years has been completed and is in the process of being published by the Publishing House of the European Mathematical Society in Zurich.

Some Introductory Literature into Topology

Since some background in general topology is desirable in a course on topological groups, 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.

Tammo tom Dieck, *Topologie*, de Gruyter, Berlin 2000², x+454SS.

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

Bodo von Querenburg, *Mengentheoretische Topologie*, Springer-Verlag Berlin usw., 2001³

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.

Again, this list is incomplete. The German textbooks are those of tom Dieck and Querenburg; they have different objectives and are both very good. The latter corresponds in spirit to the Darmstadt course on topology.

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—and it is available in the bookshops.

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.