

# Preface

This book has grown out of various courses in commutative algebra that I have taught in Heidelberg and Munich. Its primary objective is to serve as a guide for an introductory graduate course of one or two semesters, or for self-study. I have striven to craft a text that presents the concepts at the center of the field in a coherent, tightly knit way, with streamlined proofs and a focus on the core results. Needless to say, for an imperfect writer like me, such high-flying goals will always remain elusive. To introduce readers to the more recent algorithmic branch of the subject, one part of the book is devoted to computational methods. Virtually all concepts and results of commutative algebra have natural geometric interpretations. In fact, it is the geometric viewpoint that brings out the “true meaning” of the theory. This is why the first part of the book is entitled “The Algebra–Geometry Lexicon,” and why I have tried to keep a focus on the geometric context throughout. I hope that this will make the theory more alive for readers, more meaningful, more visual, and easier to remember.

I welcome any comments, suggestions for improvements, and error reports from readers. Please send them to `kemper@ma.tum.de`.

**Acknowledgments.** First and foremost, I thank the students who attended the three courses on commutative algebra that I have taught at Heidelberg and Munich. This book has benefited greatly from their participation. Particularly fruitful was the last course, given in 2008, in which I awarded one euro for every mistake in the manuscript that the students reported. This method was so successful that it cost me a small fortune. I would like to mention Peter Heinig in particular, who brought to my attention innumerable mistakes and quite a few didactic subtleties.

I am also grateful to Gert-Martin Greuel, Bernd Ulrich, Robin Hartshorne, Viet-Trung Ngo, Dale Cutkosky, Martin Kohls, and Steve Gilbert for interesting conversations.

My interest in commutative algebra grew out of my main research interest, invariant theory. In particular, the books by Sturmfels [50] and Benson [4], although they do not concentrate on commutative algebra, first awakened my

fascination for it. So my thanks go to Bernd Sturmfels and David Benson, too.

Last but not least, I am grateful to David Kramer for his outstanding job of copyediting the manuscript, to the anonymous referees, and to the people at Springer for the swift and efficient handling of the publication process.

Munich  
November 2010

*Gregor Kemper*



<http://www.springer.com/978-3-642-03544-9>

A Course in Commutative Algebra

Kemper, G.

2011, XII, 248 p., Hardcover

ISBN: 978-3-642-03544-9