

# Contents

Preface	ix
<b>Part I. Motives</b>	<b>1</b>
Introduction: Part I	3
Chapter I. The Motivic Category	7
1. The motivic DG category	9
2. The triangulated motivic category	16
3. Structure of the motivic categories	36
Chapter II. Motivic Cohomology and Higher Chow Groups	53
1. Hypercohomology in the motivic category	53
2. Higher Chow groups	65
3. The motivic cycle map	77
Chapter III. K-Theory and Motives	107
1. Chern classes	107
2. Push-forward	130
3. Riemann-Roch	161
Chapter IV. Homology, Cohomology, and Duality	191
1. Duality	191
2. Classical constructions	209
3. Motives over a perfect field	237
Chapter V. Realization of the Motivic Category	255
1. Realization for geometric cohomology	255
2. Concrete realizations	267
Chapter VI. Motivic Constructions and Comparisons	293
1. Motivic constructions	293
2. Comparison with the category $DM_{gm}(k)$	310
Appendix A. Equi-dimensional Cycles	331
1. Cycles over a normal scheme	331
2. Cycles over a reduced scheme	347
Appendix B. K-Theory	357
1. K-theory of rings and schemes	357
2. K-theory and homology	360

<b>Part II. Categorical Algebra</b>	371
Introduction: Part II	373
Chapter I. Symmetric Monoidal Structures	375
1. Foundational material	375
2. Constructions and computations	383
Chapter II. DG Categories and Triangulated Categories	401
1. Differential graded categories	401
2. Complexes and triangulated categories	414
3. Constructions	435
Chapter III. Simplicial and Cosimplicial Constructions	449
1. Complexes arising from simplicial and cosimplicial objects	449
2. Categorical cochain operations	454
3. Homotopy limits	466
Chapter IV. Canonical Models for Cohomology	481
1. Sheaves, sites, and topoi	481
2. Canonical resolutions	486
Bibliography	501
Subject Index	507
Index of Notation	513