Chapter 6. Cofibrations
1. The definition of cofibrations
2. Mapping cylinders and cofibrations
3. Replacing maps by cofibrations
4. A criterion for a map to be a cofibration
5. Cofiber homotopy equivalence

Chapter 7. Fibrations
1. The definition of fibrations
2. Path lifting functions and fibrations
3. Replacing maps by fibrations
4. A criterion for a map to be a fibration
5. Fiber homotopy equivalence
6. Change of fiber

Chapter 8. Based cofiber and fiber sequences
1. Based homotopy classes of maps
2. Cones, suspensions, paths, loops
3. Based cofibrations
4. Cofiber sequences
5. Based fibrations
6. Fiber sequences
7. Connections between cofiber and fiber sequences

Chapter 9. Higher homotopy groups
1. The definition of homotopy groups
2. Long exact sequences associated to pairs
3. Long exact sequences associated to fibrations
4. A few calculations
5. Change of basepoint
6. n-Equivalences, weak equivalences, and a technical lemma

Chapter 10. CW complexes
1. The definition and some examples of CW complexes
2. Some constructions on CW complexes
3. HELP and the Whitehead theorem
4. The cellular approximation theorem
5. Approximation of spaces by CW complexes
6. Approximation of pairs by CW pairs
7. Approximation of excisive triads by CW triads

Chapter 11. The homotopy excision and suspension theorems
1. Statement of the homotopy excision theorem
2. The Freudenthal suspension theorem
3. Proof of the homotopy excision theorem

Chapter 12. A little homological algebra
1. Chain complexes
2. Maps and homotopies of maps of chain complexes
3. Tensor products of chain complexes
4. Short and long exact sequences
4. The proof of the vanishing theorem
5. The proof of the Poincaré duality theorem
6. The orientation cover

Chapter 21. The index of manifolds; manifolds with boundary
1. The Euler characteristic of compact manifolds
2. The index of compact oriented manifolds
3. Manifolds with boundary
4. Poincaré duality for manifolds with boundary
5. The index of manifolds that are boundaries

Chapter 22. Homology, cohomology, and $K(\pi, n)$s
1. $K(\pi, n)$s and homology
2. $K(\pi, n)$s and cohomology
3. Cup and cap products
4. Postnikov systems
5. Cohomology operations

Chapter 23. Characteristic classes of vector bundles
1. The classification of vector bundles
2. Characteristic classes for vector bundles
3. Stiefel-Whitney classes of manifolds
4. Characteristic numbers of manifolds
5. Thom spaces and the Thom isomorphism theorem
6. The construction of the Stiefel-Whitney classes
7. Chern, Pontryagin, and Euler classes
8. A glimpse at the general theory

Chapter 24. An introduction to K-theory
1. The definition of K-theory
2. The Bott periodicity theorem
3. The splitting principle and the Thom isomorphism
4. The Chern character; almost complex structures on spheres
5. The Adams operations
6. The Hopf invariant one problem and its applications

Chapter 25. An introduction to cobordism
1. The cobordism groups of smooth closed manifolds
2. Sketch proof that $\mathcal{N}_s$ is isomorphic to $\pi_*(TO)$
3. Prespectra and the algebra $H_*(TO; \mathbb{Z}_2)$
4. The Steenrod algebra and its coaction on $H_*(TO)$
5. The relationship to Stiefel-Whitney numbers
6. Spectra and the computation of $\pi_*(TO) = \pi_*(MO)$
7. An introduction to the stable category

Suggestions for further reading
1. A classic book and historical references
2. Textbooks in algebraic topology and homotopy theory
3. Books on CW complexes
4. Differential forms and Morse theory
5. Equivariant algebraic topology
CONTENTS ix

6. Category theory and homological algebra 233
7. Simplicial sets in algebraic topology 233
8. The Serre spectral sequence and Serre class theory 233
9. The Eilenberg-Moore spectral sequence 233
10. Cohomology operations 234
11. Vector bundles 234
12. Characteristic classes 234
13. $K$-theory 235
14. Hopf algebras; the Steenrod algebra, Adams spectral sequence 235
15. Cobordism 236
16. Generalized homology theory and stable homotopy theory 236
17. Quillen model categories 236
18. Localization and completion; rational homotopy theory 237
19. Infinite loop space theory 237
20. Complex cobordism and stable homotopy theory 238
21. Follow-ups to this book 238

Index 239