

Solutions Of Hatcher Algebraic Topology Exercise 4

EVENUALLY, YOU WILL ENTIRELY DISCOVER A FURTHER EXPERIENCE AND FINISHING BY SPENDING MORE CASH. NEVERTHELESS WHEN? ACCOMPLISH YOU TAKE THAT YOU REQUIRE TO GET THOSE ALL NEEDS SUBSEQUENTLY HAVING SIGNIFICANTLY CASH? WHY DONT YOU TRY TO GET SOMETHING BASIC IN THE BEGINNING? THATS SOMETHING THAT WILL GUIDE YOU TO COMPREHEND EVEN MORE WITH REFERENCE TO THE GLOBE, EXPERIENCE, SOME PLACES, SIMILAR TO HISTORY, AMUSEMENT, AND A LOT MORE?

IT IS YOUR TOTALLY OWN ERA TO PUT-ON REVIEWING HABIT. AMONG GUIDES YOU COULD ENJOY NOW IS **SOLUTIONS OF HATCHER ALGEBRAIC TOPOLOGY EXERCISE 4** BELOW.

MODERN CLASSICAL HOMOTOPY THEORY - JEFFREY STROM 2011-10-19

THE CORE OF CLASSICAL HOMOTOPY THEORY IS A BODY OF IDEAS AND THEOREMS THAT EMERGED IN THE 1950S AND WAS LATER LARGELY CODIFIED IN THE NOTION OF A MODEL CATEGORY. THIS CORE INCLUDES THE NOTIONS OF FIBRATION AND COFIBRATION; CW COMPLEXES; LONG FIBER AND COFIBER SEQUENCES; LOOP SPACES AND SUSPENSIONS; AND SO ON. BROWN'S REPRESENTABILITY THEOREMS SHOW THAT HOMOLOGY AND COHOMOLOGY ARE ALSO CONTAINED IN CLASSICAL HOMOTOPY THEORY. THIS TEXT DEVELOPS CLASSICAL HOMOTOPY THEORY FROM A MODERN POINT OF VIEW, MEANING THAT THE EXPOSITION IS INFORMED BY THE THEORY OF MODEL CATEGORIES AND THAT HOMOTOPY LIMITS AND COLIMITS PLAY CENTRAL ROLES. THE EXPOSITION IS GUIDED BY THE PRINCIPLE THAT IT IS GENERALLY PREFERABLE TO PROVE TOPOLOGICAL RESULTS USING TOPOLOGY (RATHER THAN ALGEBRA). THE LANGUAGE AND BASIC THEORY OF HOMOTOPY LIMITS AND COLIMITS MAKE IT POSSIBLE TO PENETRATE DEEP INTO THE SUBJECT WITH JUST THE RUDIMENTS OF ALGEBRA. THE TEXT DOES REACH ADVANCED TERRITORY, INCLUDING THE STEENROD ALGEBRA, BOTT PERIODICITY, LOCALIZATION, THE EXPONENT THEOREM OF COHEN, MOORE, AND NEISENDORFER, AND MILLER'S THEOREM ON THE SULLIVAN CONJECTURE. THUS THE READER IS GIVEN THE TOOLS NEEDED TO UNDERSTAND AND PARTICIPATE IN RESEARCH AT (PART OF) THE CURRENT FRONTIER OF HOMOTOPY THEORY. PROOFS ARE NOT PROVIDED OUGHT. RATHER, THEY ARE PRESENTED IN THE FORM OF DIRECTED PROBLEM SETS. TO THE EXPERT, THESE READ AS TERSE PROOFS; TO NOVICES THEY ARE CHALLENGES THAT DRAW THEM IN AND HELP THEM TO THOROUGHLY UNDERSTAND THE ARGUMENTS.

ELEMENTS OF POINT SET TOPOLOGY - JOHN D. BAUM 1991-01-01

TOPOLOGY CONTINUES TO BE A TOPIC OF PRIME IMPORTANCE IN CONTEMPORARY MATHEMATICS, BUT UNTIL THE PUBLICATION OF THIS BOOK THERE WERE FEW IF ANY INTRODUCTIONS TO TOPOLOGY FOR UNDERGRADUATES. THIS BOOK REMEDIED THAT NEED BY OFFERING A CAREFULLY THOUGHT-OUT, GRADUATED APPROACH TO POINT SET TOPOLOGY AT THE UNDERGRADUATE LEVEL. TO MAKE THE BOOK AS ACCESSIBLE AS POSSIBLE, THE AUTHOR APPROACHES TOPOLOGY FROM A GEOMETRIC AND AXIOMATIC STANDPOINT;

GEOMETRIC, BECAUSE MOST STUDENTS COME TO THE SUBJECT WITH A GOOD DEAL OF GEOMETRY BEHIND THEM, ENABLING THEM TO USE THEIR GEOMETRIC INTUITION; AXIOMATIC, BECAUSE IT PARALLELS THE STUDENT'S EXPERIENCE WITH MODERN ALGEBRA, AND KEEPS THE BOOK IN HARMONY WITH CURRENT TRENDS IN MATHEMATICS. AFTER A DISCUSSION OF SUCH PRELIMINARY TOPICS AS THE ALGEBRA OF SETS, EULER-VENN DIAGRAMS AND INFINITE SETS, THE AUTHOR TAKES UP BASIC DEFINITIONS AND THEOREMS REGARDING TOPOLOGICAL SPACES (CHAPTER 1). THE SECOND CHAPTER DEALS WITH CONTINUOUS FUNCTIONS (MAPPINGS) AND HOMEOMORPHISMS, FOLLOWED BY TWO CHAPTERS ON SPECIAL TYPES OF TOPOLOGICAL SPACES (VARIETIES OF COMPACTNESS AND VARIETIES OF CONNECTEDNESS). CHAPTER 5 COVERS METRIC SPACES. SINCE BASIC POINT SET TOPOLOGY SERVES AS A FOUNDATION NOT ONLY FOR FUNCTIONAL ANALYSIS BUT ALSO FOR MORE ADVANCED WORK IN POINT SET TOPOLOGY AND ALGEBRAIC TOPOLOGY, THE AUTHOR HAS INCLUDED TOPICS AIMED AT STUDENTS WITH INTERESTS OTHER THAN ANALYSIS. MOREOVER, DR. BAUM HAS SUPPLIED QUITE DETAILED PROOFS IN THE BEGINNING TO HELP STUDENTS APPROACHING THIS TYPE OF AXIOMATIC MATHEMATICS FOR THE FIRST TIME. SIMILARLY, IN THE FIRST PART OF THE BOOK PROBLEMS ARE ELEMENTARY, BUT THEY BECOME PROGRESSIVELY MORE DIFFICULT TOWARD THE END OF THE BOOK. REFERENCES HAVE BEEN SUPPLIED TO SUGGEST FURTHER READING TO THE INTERESTED STUDENT.

COMPUTATIONAL TOPOLOGY - HERBERT EDELSBRUNNER 2010

COMBINING CONCEPTS FROM TOPOLOGY AND ALGORITHMS, THIS BOOK DELIVERS WHAT ITS TITLE PROMISES: AN INTRODUCTION TO THE FIELD OF COMPUTATIONAL TOPOLOGY. STARTING WITH MOTIVATING PROBLEMS IN BOTH MATHEMATICS AND COMPUTER SCIENCE AND BUILDING UP FROM CLASSIC TOPICS IN GEOMETRIC AND ALGEBRAIC TOPOLOGY, THE THIRD PART OF THE TEXT ADVANCES TO PERSISTENT HOMOLOGY. THIS POINT OF VIEW IS CRITICALLY IMPORTANT IN TURNING A MOSTLY THEORETICAL FIELD OF MATHEMATICS INTO ONE THAT IS RELEVANT TO A MULTITUDE OF DISCIPLINES IN THE SCIENCES AND ENGINEERING. THE MAIN APPROACH IS THE DISCOVERY OF TOPOLOGY THROUGH ALGORITHMS. THE BOOK IS IDEAL FOR TEACHING A GRADUATE OR ADVANCED UNDERGRADUATE COURSE IN

COMPUTATIONAL TOPOLOGY, AS IT DEVELOPS ALL THE BACKGROUND OF BOTH THE MATHEMATICAL AND ALGORITHMIC ASPECTS OF THE SUBJECT FROM FIRST PRINCIPLES. THUS THE TEXT COULD SERVE EQUALLY WELL IN A COURSE TAUGHT IN A MATHEMATICS DEPARTMENT OR COMPUTER SCIENCE DEPARTMENT.

TOPOLOGY FOR ANALYSIS - ALBERT WILANSKY 2008-10-17

STARTING WITH THE FIRST PRINCIPLES OF TOPOLOGY, THIS VOLUME ADVANCES TO GENERAL ANALYSIS. THREE LEVELS OF EXAMPLES AND PROBLEMS MAKE IT APPROPRIATE FOR STUDENTS AND PROFESSIONALS. ABUNDANT EXERCISES, ORDERED AND NUMBERED BY DEGREE OF DIFFICULTY, ILLUSTRATE IMPORTANT CONCEPTS, AND A 40-PAGE APPENDIX INCLUDES TABLES OF THEOREMS AND COUNTEREXAMPLES. 1970 EDITION.

ALGEBRAIC TOPOLOGY OF FINITE TOPOLOGICAL SPACES AND APPLICATIONS - JONATHAN A. BARMAN 2011-08-24

THIS VOLUME DEALS WITH THE THEORY OF FINITE TOPOLOGICAL SPACES AND ITS RELATIONSHIP WITH THE HOMOTOPY AND SIMPLE HOMOTOPY THEORY OF POLYHEDRA. THE INTERACTION BETWEEN THEIR INTRINSIC COMBINATORIAL AND TOPOLOGICAL STRUCTURES MAKES FINITE SPACES A USEFUL TOOL FOR STUDYING PROBLEMS IN TOPOLOGY, ALGEBRA AND GEOMETRY FROM A NEW PERSPECTIVE. IN PARTICULAR, THE METHODS DEVELOPED IN THIS MANUSCRIPT ARE USED TO STUDY QUILLÉN'S CONJECTURE ON THE POSET OF p -SUBGROUPS OF A FINITE GROUP AND THE ANDREWS-CURTIS CONJECTURE ON THE 3-DEFORMABILITY OF CONTRACTIBLE TWO-DIMENSIONAL COMPLEXES. THIS SELF-CONTAINED WORK CONSTITUTES THE FIRST DETAILED EXPOSITION ON THE ALGEBRAIC TOPOLOGY OF FINITE SPACES. IT IS INTENDED FOR TOPOLOGISTS AND COMBINATORIALISTS, BUT IT IS ALSO RECOMMENDED FOR ADVANCED UNDERGRADUATE STUDENTS AND GRADUATE STUDENTS WITH A MODEST KNOWLEDGE OF ALGEBRAIC TOPOLOGY.

INTRODUCTION TO KNOT THEORY - R. H. CROWELL 2012-12-06

KNOT THEORY IS A KIND OF GEOMETRY, AND ONE WHOSE APPEAL IS VERY DIRECT BECAUSE THE OBJECTS STUDIED ARE PERCEIVABLE AND TANGIBLE IN EVERYDAY PHYSICAL SPACE. IT IS A MEETING GROUND OF SUCH DIVERSE BRANCHES OF MATHEMATICS AS GROUP THEORY, MATRIX THEORY, NUMBER THEORY, ALGEBRAIC GEOMETRY, AND DIFFERENTIAL GEOMETRY, TO NAME SOME OF THE MORE PROMINENT ONES. IT HAD ITS ORIGINS IN THE MATHEMATICAL THEORY OF ELECTRICITY AND IN PRIMITIVE ATOMIC PHYSICS, AND THERE ARE HINTS TODAY OF NEW APPLICATIONS IN CERTAIN BRANCHES OF CHEMISTRY. THE OUTLINES OF THE MODERN TOPOLOGICAL THEORY WERE WORKED OUT BY DEHN, ALEXANDER, REIDEMEISTER, AND SEIFERT ALMOST THIRTY YEARS AGO. AS A SUBFIELD OF TOPOLOGY, KNOT THEORY FORMS THE CORE OF A WIDE RANGE OF PROBLEMS DEALING WITH THE POSITION OF ONE MANIFOLD IMBEDDED WITHIN ANOTHER. THIS BOOK, WHICH IS AN ELABORATION OF A SERIES OF LECTURES GIVEN BY FOX AT HAVERFORD COLLEGE WHILE A PHILIPS VISITOR THERE IN THE SPRING OF 1956, IS AN ATTEMPT TO MAKE THE SUBJECT ACCESSIBLE TO EVERYONE. PRIMARILY IT IS A TEXT BOOK FOR A COURSE AT THE JUNIOR-SENIOR LEVEL, BUT WE BELIEVE THAT IT CAN BE USED WITH PROFIT ALSO BY GRADUATE STUDENTS. BECAUSE THE ALGEBRA REQUIRED IS NOT

THE FAMILIAR COMMUTATIVE ALGEBRA, A DISPROPORTIONATE AMOUNT OF THE BOOK IS GIVEN OVER TO NECESSARY ALGEBRAIC PRELIMINARIES.

ELEMENTARY TOPOLOGY - O. YA. VIRO, O. A. IVANOV, N. YU. NETSVETAEV, V. M. KHARLAMOV

THIS TEXT CONTAINS A DETAILED INTRODUCTION TO GENERAL TOPOLOGY AND AN INTRODUCTION TO ALGEBRAIC TOPOLOGY VIA ITS MOST CLASSICAL AND ELEMENTARY SEGMENT. PROOFS OF THEOREMS ARE SEPARATED FROM THEIR FORMULATIONS AND ARE GATHERED AT THE END OF EACH CHAPTER, MAKING THIS BOOK APPEAR LIKE A PROBLEM BOOK AND ALSO GIVING IT APPEAL TO THE EXPERT AS A HANDBOOK. THE BOOK INCLUDES ABOUT 1,000 EXERCISES.

TOPOLOGY ILLUSTRATED - PETER SAVELIEV 2016-02-02

THIS BOOK FOLLOWS A TWO-SEMESTER FIRST COURSE IN TOPOLOGY WITH EMPHASIS ON ALGEBRAIC TOPOLOGY. SOME OF THE APPLICATIONS ARE: THE SHAPE OF THE UNIVERSE, CONFIGURATION SPACES, DIGITAL IMAGE ANALYSIS, DATA ANALYSIS, SOCIAL CHOICE, EXCHANGE ECONOMY. AN OVERVIEW OF DISCRETE CALCULUS IS ALSO INCLUDED. THE BOOK CONTAINS OVER 1000 COLOR ILLUSTRATIONS AND OVER 1000 EXERCISES.

ALGEBRAIC TOPOLOGY: AN INTUITIVE APPROACH - HAJIME SATO 1999

THE SINGLE MOST DIFFICULT THING ONE FACES WHEN ONE BEGINS TO LEARN A NEW BRANCH OF MATHEMATICS IS TO GET A FEEL FOR THE MATHEMATICAL SENSE OF THE SUBJECT. THE PURPOSE OF THIS BOOK IS TO HELP THE ASPIRING READER ACQUIRE THIS ESSENTIAL COMMON SENSE ABOUT ALGEBRAIC TOPOLOGY IN A SHORT PERIOD OF TIME. TO THIS END, SATO LEADS THE READER THROUGH SIMPLE BUT MEANINGFUL EXAMPLES IN CONCRETE TERMS. MOREOVER, RESULTS ARE NOT DISCUSSED IN THEIR GREATEST POSSIBLE GENERALITY, BUT IN TERMS OF THE SIMPLEST AND MOST ESSENTIAL CASES. IN RESPONSE TO SUGGESTIONS FROM READERS OF THE ORIGINAL EDITION OF THIS BOOK, SATO HAS ADDED AN APPENDIX OF USEFUL DEFINITIONS AND RESULTS ON SETS, GENERAL TOPOLOGY, GROUPS AND SUCH. HE HAS ALSO PROVIDED REFERENCES. TOPICS COVERED INCLUDE FUNDAMENTAL NOTIONS SUCH AS HOMEOMORPHISMS, HOMOTOPY EQUIVALENCE, FUNDAMENTAL GROUPS AND HIGHER HOMOTOPY GROUPS, HOMOLOGY AND COHOMOLOGY, FIBER BUNDLES, SPECTRAL SEQUENCES AND CHARACTERISTIC CLASSES. OBJECTS AND EXAMPLES CONSIDERED IN THE TEXT INCLUDE THE TORUS, THE MÖBIUS STRIP, THE KLEIN BOTTLE, CLOSED SURFACES, CELL COMPLEXES AND VECTOR BUNDLES.

APPLICATIONS OF ALGEBRAIC TOPOLOGY - S. LEFSCHETZ 2012-12-06

THIS MONOGRAPH IS BASED, IN PART, UPON LECTURES GIVEN IN THE PRINCETON SCHOOL OF ENGINEERING AND APPLIED SCIENCE. IT PRESUPPOSES MAINLY AN ELEMENTARY KNOWLEDGE OF LINEAR ALGEBRA AND OF TOPOLOGY. IN TOPOLOGY THE LIMIT IS DIMENSION TWO MAINLY IN THE LATTER CHAPTERS AND QUESTIONS OF TOPOLOGICAL INVARIANCE ARE CAREFULLY AVOIDED. FROM THE TECHNICAL VIEWPOINT GRAPHS IS OUR ONLY REQUIREMENT. HOWEVER, LATER, QUESTIONS NOTABLY RELATED TO KURATOWSKI'S CLASSICAL THEOREM HAVE DEMANDED AN EASILY PROVIDED TREATMENT OF 2-COMPLEXES AND SURFACES. JANUARY

1972 SOLOMON LEFSCHETZ 4 INTRODUCTION THE STUDY OF ELECTRICAL NETWORKS RESTS UPON PRELIMINARY THEORY OF GRAPHS. IN THE LITERATURE THIS THEORY HAS ALWAYS BEEN DEALT WITH BY SPECIAL AD HOC METHODS. MY PURPOSE HERE IS TO SHOW THAT ACTUALLY THIS THEORY IS NOTHING ELSE THAN THE FIRST CHAPTER OF CLASSICAL ALGEBRAIC TOPOLOGY AND MAY BE VERY ADVANTAGEOUSLY TREATED AS SUCH BY THE WELL KNOWN METHODS OF THAT SCIENCE. PART I OF THIS VOLUME COVERS THE FOLLOWING GROUND: THE FIRST TWO CHAPTERS PRESENT, MAINLY IN OUTLINE, THE NEEDED BASIC ELEMENTS OF LINEAR ALGEBRA. IN THIS PART DUALITY IS DEALT WITH SOMEWHAT MORE EXTENSIVELY. IN CHAPTER III THE MEREST ELEMENTS OF GENERAL TOPOLOGY ARE DISCUSSED. GRAPH THEORY PROPER IS COVERED IN CHAPTERS IV AND V, FIRST STRUCTURALLY AND THEN AS ALGEBRA. CHAPTER VI DISCUSSES THE APPLICATIONS TO NETWORKS. IN CHAPTERS VII AND VIII THE ELEMENTS OF THE THEORY OF 2-DIMENSIONAL COMPLEXES AND SURFACES ARE PRESENTED.

UNDERSTANDING TOPOLOGY - SHAUN V. AULT 2018-01-30

"TOPOLOGY CAN PRESENT SIGNIFICANT CHALLENGES FOR UNDERGRADUATE STUDENTS OF MATHEMATICS AND THE SCIENCES. 'UNDERSTANDING TOPOLOGY' AIMS TO CHANGE THAT. THE PERFECT INTRODUCTORY TOPOLOGY TEXTBOOK, 'UNDERSTANDING TOPOLOGY' REQUIRES ONLY A KNOWLEDGE OF CALCULUS AND A GENERAL FAMILIARITY WITH SET THEORY AND LOGIC. EQUALLY APPROACHABLE AND RIGOROUS, THE BOOK'S CLEAR ORGANIZATION, WORKED EXAMPLES, AND CONCISE WRITING STYLE SUPPORT A THOROUGH UNDERSTANDING OF BASIC TOPOLOGICAL PRINCIPLES. PROFESSOR SHAUN V. AULT'S UNIQUE EMPHASIS ON FASCINATING APPLICATIONS, FROM CHEMICAL DYNAMICS TO DETERMINING THE SHAPE OF THE UNIVERSE, WILL ENGAGE STUDENTS IN A WAY TRADITIONAL TOPOLOGY TEXTBOOKS DO NOT"--BACK COVER.

GEOMETRIC AND TOPOLOGICAL INFERENCE - JEAN-DANIEL BOISSONNAT 2018-09-27

A RIGOROUS INTRODUCTION TO GEOMETRIC AND TOPOLOGICAL INFERENCE, FOR ANYONE INTERESTED IN A GEOMETRIC APPROACH TO DATA SCIENCE.

HOMOLOGY THEORY - JAMES W. VICK 2012-12-06

THIS INTRODUCTION TO SOME BASIC IDEAS IN ALGEBRAIC TOPOLOGY IS DEVOTED TO THE FOUNDATIONS AND APPLICATIONS OF HOMOLOGY THEORY. AFTER THE ESSENTIALS OF SINGULAR HOMOLOGY AND SOME IMPORTANT APPLICATIONS ARE GIVEN, SUCCESSIVE TOPICS COVERED INCLUDE ATTACHING SPACES, FINITE CW COMPLEXES, COHOMOLOGY PRODUCTS, MANIFOLDS, POINCARÉ DUALITY, AND FIXED POINT THEORY. THIS SECOND EDITION INCLUDES A CHAPTER ON COVERING SPACES AND MANY NEW EXERCISES.

ALGEBRA: CHAPTER 0 - PAOLO ALUFFI 2009

ALGEBRA: CHAPTER 0 IS A SELF-CONTAINED INTRODUCTION TO THE MAIN TOPICS OF ALGEBRA, SUITABLE FOR A FIRST SEQUENCE ON THE SUBJECT AT THE BEGINNING GRADUATE OR UPPER UNDERGRADUATE LEVEL. THE PRIMARY DISTINGUISHING FEATURE OF THE BOOK, COMPARED TO STANDARD TEXTBOOKS IN ALGEBRA, IS THE EARLY INTRODUCTION OF CATEGORIES, USED AS A UNIFYING THEME IN THE PRESENTATION OF THE MAIN TOPICS. A

SECOND FEATURE CONSISTS OF AN EMPHASIS ON HOMOLOGICAL ALGEBRA: BASIC NOTIONS ON COMPLEXES ARE PRESENTED AS SOON AS MODULES HAVE BEEN INTRODUCED, AND AN EXTENSIVE LAST CHAPTER ON HOMOLOGICAL ALGEBRA CAN FORM THE BASIS FOR A FOLLOW-UP INTRODUCTORY COURSE ON THE SUBJECT. APPROXIMATELY 1,000 EXERCISES BOTH PROVIDE ADEQUATE PRACTICE TO CONSOLIDATE THE UNDERSTANDING OF THE MAIN BODY OF THE TEXT AND OFFER THE OPPORTUNITY TO EXPLORE MANY OTHER TOPICS, INCLUDING APPLICATIONS TO NUMBER THEORY AND ALGEBRAIC GEOMETRY. THIS WILL ALLOW INSTRUCTORS TO ADAPT THE TEXTBOOK TO THEIR SPECIFIC CHOICE OF TOPICS AND PROVIDE THE INDEPENDENT READER WITH A RICHER EXPOSURE TO ALGEBRA. MANY EXERCISES INCLUDE SUBSTANTIAL HINTS, AND NAVIGATION OF THE TOPICS IS FACILITATED BY AN EXTENSIVE INDEX AND BY HUNDREDS OF CROSS-REFERENCES.

ALGEBRAIC TOPOLOGY - ALLEN HATCHER 2002

IN MOST MATHEMATICS DEPARTMENTS AT MAJOR UNIVERSITIES ONE OF THE THREE OR FOUR BASIC FIRST-YEAR GRADUATE COURSES IS IN THE SUBJECT OF ALGEBRAIC TOPOLOGY. THIS INTRODUCTORY TEXTBOOK IN ALGEBRAIC TOPOLOGY IS SUITABLE FOR USE IN A COURSE OR FOR SELF-STUDY, FEATURING BROAD COVERAGE OF THE SUBJECT AND A READABLE EXPOSITION, WITH MANY EXAMPLES AND EXERCISES. THE FOUR MAIN CHAPTERS PRESENT THE BASIC MATERIAL OF THE SUBJECT: FUNDAMENTAL GROUP AND COVERING SPACES, HOMOLOGY AND COHOMOLOGY, HIGHER HOMOTOPY GROUPS, AND HOMOTOPY THEORY GENERALLY. THE AUTHOR EMPHASIZES THE GEOMETRIC ASPECTS OF THE SUBJECT, WHICH HELPS STUDENTS GAIN INTUITION. A UNIQUE FEATURE OF THE BOOK IS THE INCLUSION OF MANY OPTIONAL TOPICS WHICH ARE NOT USUALLY PART OF A FIRST COURSE DUE TO TIME CONSTRAINTS, AND FOR WHICH ELEMENTARY EXPOSITIONS ARE SOMETIMES HARD TO FIND. AMONG THESE ARE: BOCKSTEIN AND TRANSFER HOMOMORPHISMS, DIRECT AND INVERSE LIMITS, H-SPACES AND HOPF ALGEBRAS, THE BROWN REPRESENTABILITY THEOREM, THE JAMES REDUCED PRODUCT, THE DOLD-THOM THEOREM, AND A FULL EXPOSITION OF STEENROD SQUARES AND POWERS. RESEARCHERS WILL ALSO WELCOME THIS ASPECT OF THE BOOK.

A CONCISE COURSE IN ALGEBRAIC TOPOLOGY - J. P. MAY 1999-09

ALGEBRAIC TOPOLOGY IS A BASIC PART OF MODERN MATHEMATICS, AND SOME KNOWLEDGE OF THIS AREA IS INDISPENSABLE FOR ANY ADVANCED WORK RELATING TO GEOMETRY, INCLUDING TOPOLOGY ITSELF, DIFFERENTIAL GEOMETRY, ALGEBRAIC GEOMETRY, AND LIE GROUPS. THIS BOOK PROVIDES A DETAILED TREATMENT OF ALGEBRAIC TOPOLOGY BOTH FOR TEACHERS OF THE SUBJECT AND FOR ADVANCED GRADUATE STUDENTS IN MATHEMATICS EITHER SPECIALIZING IN THIS AREA OR CONTINUING ON TO OTHER FIELDS. J. PETER MAY'S APPROACH REFLECTS THE ENORMOUS INTERNAL DEVELOPMENTS WITHIN ALGEBRAIC TOPOLOGY OVER THE PAST SEVERAL DECADES, MOST OF WHICH ARE LARGELY UNKNOWN TO MATHEMATICIANS IN OTHER FIELDS. BUT HE ALSO RETAINS THE CLASSICAL PRESENTATIONS OF VARIOUS TOPICS WHERE APPROPRIATE. MOST CHAPTERS END WITH PROBLEMS THAT FURTHER EXPLORE AND REFINE THE CONCEPTS PRESENTED. THE FINAL FOUR CHAPTERS PROVIDE SKETCHES OF SUBSTANTIAL AREAS OF ALGEBRAIC TOPOLOGY THAT ARE NORMALLY OMITTED

FROM INTRODUCTORY TEXTS, AND THE BOOK CONCLUDES WITH A LIST OF SUGGESTED READINGS FOR THOSE INTERESTED IN DELVING FURTHER INTO THE FIELD.

TOPOLOGY AND GEOMETRY - GLEN E. BREDON 2013-03-09

THIS BOOK OFFERS AN INTRODUCTORY COURSE IN ALGEBRAIC TOPOLOGY. STARTING WITH GENERAL TOPOLOGY, IT DISCUSSES DIFFERENTIABLE MANIFOLDS, COHOMOLOGY, PRODUCTS AND DUALITY, THE FUNDAMENTAL GROUP, HOMOLOGY THEORY, AND HOMOTOPY THEORY. FROM THE REVIEWS: "AN INTERESTING AND ORIGINAL GRADUATE TEXT IN TOPOLOGY AND GEOMETRY...A GOOD LECTURER CAN USE THIS TEXT TO CREATE A FINE COURSE...A BEGINNING GRADUATE STUDENT CAN USE THIS TEXT TO LEARN A GREAT DEAL OF MATHEMATICS." — MATHEMATICAL REVIEWS

NOTES ON LIE ALGEBRAS - HANS SAMELSON 2012-12-06

(CARTAN SUB LIE ALGEBRA, ROOTS, WEYL GROUP, DYNKIN DIAGRAM, . . .) AND THE CLASSIFICATION, AS FOUND BY KILLING AND CARTAN (THE LIST OF ALL SEMISIMPLE LIE ALGEBRAS CONSISTS OF (1) THE SPECIAL- LINEAR ONES, I. E. ALL MATRICES (OF ANY FIXED DIMENSION) WITH TRACE 0, (2) THE ORTHOGONAL ONES, I. E. ALL SKEWSYMMETRIC MATRICES (OF ANY FIXED DIMENSION), (3) THE SYMPLECTIC ONES, I. E. ALL MATRICES M (OF ANY FIXED EVEN DIMENSION) THAT SATISFY $MJ = -JMT$ WITH A CERTAIN NON-DEGENERATE SKEWSYMMETRIC MATRIX J , AND (4) FIVE SPECIAL LIE ALGEBRAS G_2, F_4, E_6, E_7, E_8 , OF DIMENSIONS 14, 52, 78, 133, 248, THE "EXCEPTIONAL LIE ALGEBRAS", THAT JUST SOMEHOW APPEAR IN THE PROCESS). THERE IS ALSO A DISCUSSION OF THE COMPACT FORM AND OTHER REAL FORMS OF A (COMPLEX) SEMISIMPLE LIE ALGEBRA, AND A SECTION ON AUTOMORPHISMS. THE THIRD CHAPTER BRINGS THE THEORY OF THE FINITE DIMENSIONAL REPRESENTATIONS OF A SEMISIMPLE LIE ALGEBRA, WITH THE HIGHEST OR EXTREME WEIGHT AS CENTRAL NOTION. THE PROOF FOR THE EXISTENCE OF REPRESENTATIONS IS AN AD HOC VERSION OF THE PRESENT STANDARD PROOF, BUT AVOIDS EXPLICIT USE OF THE POINCARÉ-BIRKHOFF-WITT THEOREM. COMPLETE REDUCIBILITY IS PROVED, AS USUAL, WITH J. H. C. WHITEHEAD'S PROOF (THE FIRST PROOF, BY H. WEYL, WAS ANALYTICAL-TOPOLOGICAL AND USED THE EXISTENCE OF A COMPACT FORM OF THE GROUP IN QUESTION). THEN COME H.

THE MATHEMATICS OF CHIP-FIRING - CAROLINE J. KLIVANS 2018-11-15

THE MATHEMATICS OF CHIP-FIRING IS A SOLID INTRODUCTION AND OVERVIEW OF THE GROWING FIELD OF CHIP-FIRING. IT OFFERS AN APPRECIATION FOR THE RICHNESS AND DIVERSITY OF THE SUBJECT. CHIP-FIRING REFERS TO A DISCRETE DYNAMICAL SYSTEM — A COMMODITY IS EXCHANGED BETWEEN SITES OF A NETWORK ACCORDING TO VERY SIMPLE LOCAL RULES. ALTHOUGH GOVERNED BY LOCAL RULES, THE LONG-TERM GLOBAL BEHAVIOR OF THE SYSTEM REVEALS FASCINATING PROPERTIES. THE FUNDAMENTAL PROPERTIES OF CHIP-FIRING ARE COVERED FROM A VARIETY OF PERSPECTIVES. THIS GIVES THE READER BOTH A BROAD CONTEXT OF THE FIELD AND CONCRETE ENTRY POINTS FROM DIFFERENT BACKGROUNDS. BROKEN INTO TWO SECTIONS, THE FIRST EXAMINES THE FUNDAMENTALS OF CHIP-FIRING, WHILE THE SECOND HALF PRESENTS MORE GENERAL FRAMEWORKS FOR CHIP-FIRING. INSTRUCTORS AND STUDENTS WILL DISCOVER THAT THIS BOOK PROVIDES A COMPREHENSIVE BACKGROUND TO

APPROACHING ORIGINAL SOURCES. FEATURES: PROVIDES A BROAD INTRODUCTION FOR RESEARCHERS INTERESTED IN THE SUBJECT OF CHIP-FIRING THE TEXT INCLUDES HISTORICAL AND CURRENT PERSPECTIVES EXERCISES INCLUDED AT THE END OF EACH CHAPTER ABOUT THE AUTHOR: CAROLINE J. KLIVANS RECEIVED A BA DEGREE IN MATHEMATICS FROM CORNELL UNIVERSITY AND A PhD IN APPLIED MATHEMATICS FROM MIT. CURRENTLY, SHE IS AN ASSOCIATE PROFESSOR IN THE DIVISION OF APPLIED MATHEMATICS AT BROWN UNIVERSITY. SHE IS ALSO AN ASSOCIATE DIRECTOR OF ICERM (INSTITUTE FOR COMPUTATIONAL AND EXPERIMENTAL RESEARCH IN MATHEMATICS). BEFORE COMING TO BROWN SHE HELD POSITIONS AT MSRI, CORNELL AND THE UNIVERSITY OF CHICAGO. HER RESEARCH IS IN ALGEBRAIC, GEOMETRIC AND TOPOLOGICAL COMBINATORICS.

INTRODUCTION TO TOPOLOGICAL MANIFOLDS - JOHN M. LEE 2006-04-06

MANIFOLDS PLAY AN IMPORTANT ROLE IN TOPOLOGY, GEOMETRY, COMPLEX ANALYSIS, ALGEBRA, AND CLASSICAL MECHANICS. LEARNING MANIFOLDS DIFFERS FROM MOST OTHER INTRODUCTORY MATHEMATICS IN THAT THE SUBJECT MATTER IS OFTEN COMPLETELY UNFAMILIAR. THIS INTRODUCTION GUIDES READERS BY EXPLAINING THE ROLES MANIFOLDS PLAY IN DIVERSE BRANCHES OF MATHEMATICS AND PHYSICS. THE BOOK BEGINS WITH THE BASICS OF GENERAL TOPOLOGY AND GENTLY MOVES TO MANIFOLDS, THE FUNDAMENTAL GROUP, AND COVERING SPACES.

COHOMOLOGY OF GROUPS - KENNETH S. BROWN 2012-12-06

AIMED AT SECOND YEAR GRADUATE STUDENTS, THIS TEXT INTRODUCES THEM TO COHOMOLOGY THEORY (INVOLVING A RICH INTERPLAY BETWEEN ALGEBRA AND TOPOLOGY) WITH A MINIMUM OF PREREQUISITES. NO HOMOLOGICAL ALGEBRA IS ASSUMED BEYOND WHAT IS NORMALLY LEARNED IN A FIRST COURSE IN ALGEBRAIC TOPOLOGY, AND THE BASICS OF THE SUBJECT, AS WELL AS EXERCISES, ARE GIVEN PRIOR TO DISCUSSION OF MORE SPECIALIZED TOPICS.

HIGHER INDEX THEORY - RUFUS WILLETT 2020-06-30

INDEX THEORY STUDIES THE SOLUTIONS TO DIFFERENTIAL EQUATIONS ON GEOMETRIC SPACES, THEIR RELATION TO THE UNDERLYING GEOMETRY AND TOPOLOGY, AND APPLICATIONS TO PHYSICS. IF THE SPACE OF SOLUTIONS IS INFINITE DIMENSIONAL, IT BECOMES NECESSARY TO GENERALISE THE CLASSICAL FREDHOLM INDEX USING TOOLS FROM THE K-THEORY OF OPERATOR ALGEBRAS. THIS LEADS TO HIGHER INDEX THEORY, A RAPIDLY DEVELOPING SUBJECT WITH CONNECTIONS TO NONCOMMUTATIVE GEOMETRY, LARGE-SCALE GEOMETRY, MANIFOLD TOPOLOGY AND GEOMETRY, AND OPERATOR ALGEBRAS. AIMED AT GEOMETERS, TOPOLOGISTS AND OPERATOR ALGEBRAISTS, THIS BOOK TAKES A FRIENDLY AND CONCRETE APPROACH TO THIS EXCITING THEORY, FOCUSING ON THE MAIN CONJECTURES IN THE AREA AND THEIR APPLICATIONS OUTSIDE OF IT. A WELL-BALANCED COMBINATION OF DETAILED INTRODUCTORY MATERIAL (WITH EXERCISES), CUTTING-EDGE DEVELOPMENTS AND REFERENCES TO THE WIDER LITERATURE MAKE THIS A VALUABLE GUIDE TO THIS ACTIVE AREA FOR GRADUATE STUDENTS AND EXPERTS ALIKE.

ALGEBRAIC TOPOLOGY 1981 - 1982

ALGEBRAIC TOPOLOGY - SATYA DEO 2003-12-01

COUNTEREXAMPLES IN TOPOLOGY - LYNN ARTHUR STEEN 2013-04-22

OVER 140 EXAMPLES, PRECEDED BY A SUCCINCT EXPOSITION OF GENERAL TOPOLOGY AND BASIC TERMINOLOGY. EACH EXAMPLE TREATED AS A WHOLE. NUMEROUS PROBLEMS AND EXERCISES CORRELATED WITH EXAMPLES. 1978 EDITION. BIBLIOGRAPHY.

A BASIC COURSE IN ALGEBRAIC TOPOLOGY - WILLIAM S. MASSEY 2019-06-28

THIS TEXTBOOK IS INTENDED FOR A COURSE IN ALGEBRAIC TOPOLOGY AT THE BEGINNING GRADUATE LEVEL. THE MAIN TOPICS COVERED ARE THE CLASSIFICATION OF COMPACT 2-MANIFOLDS, THE FUNDAMENTAL GROUP, COVERING SPACES, SINGULAR HOMOLOGY THEORY, AND SINGULAR COHOMOLOGY THEORY. THESE TOPICS ARE DEVELOPED SYSTEMATICALLY, AVOIDING ALL UNNECESSARY DEFINITIONS, TERMINOLOGY, AND TECHNICAL MACHINERY. THE TEXT CONSISTS OF MATERIAL FROM THE FIRST FIVE CHAPTERS OF THE AUTHOR'S EARLIER BOOK, ALGEBRAIC TOPOLOGY; AN INTRODUCTION (GTM 56) TOGETHER WITH ALMOST ALL OF HIS BOOK, SINGULAR HOMOLOGY THEORY (GTM 70). THE MATERIAL FROM THE TWO EARLIER BOOKS HAS BEEN SUBSTANTIALLY REVISED, CORRECTED, AND BROUGHT UP TO DATE. HANDBOOK OF ALGEBRAIC TOPOLOGY - I.M. JAMES 1995-07-18

ALGEBRAIC TOPOLOGY (ALSO KNOWN AS HOMOTOPY THEORY) IS A FLOURISHING BRANCH OF MODERN MATHEMATICS. IT IS VERY MUCH AN INTERNATIONAL SUBJECT AND THIS IS REFLECTED IN THE BACKGROUND OF THE 36 LEADING EXPERTS WHO HAVE CONTRIBUTED TO THE HANDBOOK. WRITTEN FOR THE READER WHO ALREADY HAS A GROUNDING IN THE SUBJECT, THE VOLUME CONSISTS OF 27 EXPOSITORY SURVEYS COVERING THE MOST ACTIVE AREAS OF RESEARCH. THEY PROVIDE THE RESEARCHER WITH AN UP-TO-DATE OVERVIEW OF THIS EXCITING BRANCH OF MATHEMATICS.

LECTURE NOTES IN ALGEBRAIC TOPOLOGY - JAMES FREDERIC DAVIS 2001

THE AMOUNT OF ALGEBRAIC TOPOLOGY A GRADUATE STUDENT SPECIALIZING IN TOPOLOGY MUST LEARN CAN BE INTIMIDATING. MOREOVER, BY THEIR SECOND YEAR OF GRADUATE STUDIES, STUDENTS MUST MAKE THE TRANSITION FROM UNDERSTANDING SIMPLE PROOFS LINE-BY-LINE TO UNDERSTANDING THE OVERALL STRUCTURE OF PROOFS OF DIFFICULT THEOREMS. TO HELP STUDENTS MAKE THIS TRANSITION, THE MATERIAL IN THIS BOOK IS PRESENTED IN AN INCREASINGLY SOPHISTICATED MANNER. IT IS INTENDED TO BRIDGE THE GAP BETWEEN ALGEBRAIC AND GEOMETRIC TOPOLOGY, BOTH BY PROVIDING THE ALGEBRAIC TOOLS THAT A GEOMETRIC TOPOLOGIST NEEDS AND BY CONCENTRATING ON THOSE AREAS OF ALGEBRAIC TOPOLOGY THAT ARE GEOMETRICALLY MOTIVATED. PREREQUISITES FOR USING THIS BOOK INCLUDE BASIC SET-THEORETIC TOPOLOGY, THE DEFINITION OF CW-COMPLEXES, SOME KNOWLEDGE OF THE FUNDAMENTAL GROUP/COVERING SPACE THEORY, AND THE CONSTRUCTION OF SINGULAR HOMOLOGY. MOST OF THIS MATERIAL IS BRIEFLY REVIEWED AT THE BEGINNING OF THE BOOK. THE TOPICS DISCUSSED BY THE AUTHORS INCLUDE TYPICAL MATERIAL FOR FIRST- AND SECOND-YEAR GRADUATE COURSES. THE CORE OF THE EXPOSITION CONSISTS OF CHAPTERS ON HOMOTOPY GROUPS AND ON SPECTRAL SEQUENCES. THERE IS

ALSO MATERIAL THAT WOULD INTEREST STUDENTS OF GEOMETRIC TOPOLOGY (HOMOLOGY WITH LOCAL COEFFICIENTS AND OBSTRUCTION THEORY) AND ALGEBRAIC TOPOLOGY (SPECTRA AND GENERALIZED HOMOLOGY), AS WELL AS PREPARATION FOR MORE ADVANCED TOPICS SUCH AS ALGEBRAIC K-THEORY AND THE S-COBORDISM THEOREM. A UNIQUE FEATURE OF THE BOOK IS THE INCLUSION, AT THE END OF EACH CHAPTER, OF SEVERAL PROJECTS THAT REQUIRE STUDENTS TO PRESENT PROOFS OF SUBSTANTIAL THEOREMS AND TO WRITE NOTES ACCOMPANYING THEIR EXPLANATIONS. WORKING ON THESE PROJECTS ALLOWS STUDENTS TO GRAPPLE WITH THE "BIG PICTURE", TEACHES THEM HOW TO GIVE MATHEMATICAL LECTURES, AND PREPARES THEM FOR PARTICIPATING IN RESEARCH SEMINARS. THE BOOK IS DESIGNED AS A TEXTBOOK FOR GRADUATE STUDENTS STUDYING ALGEBRAIC AND GEOMETRIC TOPOLOGY AND HOMOTOPY THEORY. IT WILL ALSO BE USEFUL FOR STUDENTS FROM OTHER FIELDS SUCH AS DIFFERENTIAL GEOMETRY, ALGEBRAIC GEOMETRY, AND HOMOLOGICAL ALGEBRA. THE EXPOSITION IN THE TEXT IS CLEAR; SPECIAL CASES ARE PRESENTED OVER COMPLEX GENERAL STATEMENTS.

TOPOLOGY AND GROUPOIDS - RONALD BROWN 2006

ANNOTATION. THE BOOK IS INTENDED AS A TEXT FOR A TWO-SEMESTER COURSE IN TOPOLOGY AND ALGEBRAIC TOPOLOGY AT THE ADVANCED UNDERGRADUATE OR BEGINNING GRADUATE LEVEL. THERE ARE OVER 500 EXERCISES, 114 FIGURES, NUMEROUS DIAGRAMS. THE GENERAL DIRECTION OF THE BOOK IS TOWARD HOMOTOPY THEORY WITH A GEOMETRIC POINT OF VIEW. THIS BOOK WOULD PROVIDE A MORE THAN ADEQUATE BACKGROUND FOR A STANDARD ALGEBRAIC TOPOLOGY COURSE THAT BEGINS WITH HOMOLOGY THEORY. FOR MORE INFORMATION SEE WWW.BANGOR.AC.UK/R.BROWN/TOPGPD.SHTML THIS VERSION DATED APRIL 19, 2006, HAS A NUMBER OF CORRECTIONS MADE.

ALGEBRAIC TOPOLOGY - EDWIN H. SPANIER 2012-12-06

THIS BOOK SURVEYS THE FUNDAMENTAL IDEAS OF ALGEBRAIC TOPOLOGY. THE FIRST PART COVERS THE FUNDAMENTAL GROUP, ITS DEFINITION AND APPLICATION IN THE STUDY OF COVERING SPACES. THE SECOND PART TURNS TO HOMOLOGY THEORY INCLUDING COHOMOLOGY, CUP PRODUCTS, COHOMOLOGY OPERATIONS AND TOPOLOGICAL MANIFOLDS. THE FINAL PART IS DEVOTED TO HOMOTOPY THEORY, INCLUDING BASIC FACTS ABOUT HOMOTOPY GROUPS AND APPLICATIONS TO OBSTRUCTION THEORY.

LECTURES ON ALGEBRAIC TOPOLOGY - SERGEI VLADIMIROVICH MATVEEV 2006

ALGEBRAIC TOPOLOGY IS THE STUDY OF THE GLOBAL PROPERTIES OF SPACES BY MEANS OF ALGEBRA. IT IS AN IMPORTANT BRANCH OF MODERN MATHEMATICS WITH A WIDE DEGREE OF APPLICABILITY TO OTHER FIELDS, INCLUDING GEOMETRIC TOPOLOGY, DIFFERENTIAL GEOMETRY, FUNCTIONAL ANALYSIS, DIFFERENTIAL EQUATIONS, ALGEBRAIC GEOMETRY, NUMBER THEORY, AND THEORETICAL PHYSICS. THIS BOOK PROVIDES AN INTRODUCTION TO THE BASIC CONCEPTS AND METHODS OF ALGEBRAIC TOPOLOGY FOR THE BEGINNER. IT PRESENTS ELEMENTS OF BOTH HOMOLOGY THEORY AND HOMOTOPY THEORY, AND INCLUDES VARIOUS APPLICATIONS. THE AUTHOR'S INTENTION IS TO RELY ON THE GEOMETRIC APPROACH BY APPEALING TO THE READER'S OWN INTUITION TO HELP UNDERSTANDING. THE

NUMEROUS ILLUSTRATIONS IN THE TEXT ALSO SERVE THIS PURPOSE. TWO FEATURES MAKE THE TEXT DIFFERENT FROM THE STANDARD LITERATURE: FIRST, SPECIAL ATTENTION IS GIVEN TO PROVIDING EXPLICIT ALGORITHMS FOR CALCULATING THE HOMOLOGY GROUPS AND FOR MANIPULATING THE FUNDAMENTAL GROUPS. SECOND, THE BOOK CONTAINS MANY EXERCISES, ALL OF WHICH ARE SUPPLIED WITH HINTS OR SOLUTIONS. THIS MAKES THE BOOK SUITABLE FOR BOTH CLASSROOM USE AND FOR INDEPENDENT STUDY.

MOSTLY SURFACES - RICHARD EVAN SCHWARTZ 2011

THE GOAL OF THE BOOK IS TO PRESENT A TAPESTRY OF IDEAS FROM VARIOUS AREAS OF MATHEMATICS IN A CLEAR AND RIGOROUS YET INFORMAL AND FRIENDLY WAY. PREREQUISITES INCLUDE UNDERGRADUATE COURSES IN REAL ANALYSIS AND IN LINEAR ALGEBRA, AND SOME KNOWLEDGE OF COMPLEX ANALYSIS. --FROM PUBLISHER DESCRIPTION.

COMPUTATIONAL TOPOLOGY FOR DATA ANALYSIS - TAMAL KRISHNA DEY 2022-03-10

THIS BOOK PROVIDES A COMPUTATIONAL AND ALGORITHMIC FOUNDATION FOR TECHNIQUES IN TOPOLOGICAL DATA ANALYSIS, WITH EXAMPLES AND EXERCISES.

PERSISTENCE THEORY: FROM QUIVER REPRESENTATIONS TO DATA ANALYSIS - STEVE Y. OUDOT 2017-05-17

PERSISTENCE THEORY EMERGED IN THE EARLY 2000s AS A NEW THEORY IN THE AREA OF APPLIED AND COMPUTATIONAL TOPOLOGY. THIS BOOK PROVIDES A BROAD AND MODERN VIEW OF THE SUBJECT, INCLUDING ITS ALGEBRAIC, TOPOLOGICAL, AND ALGORITHMIC ASPECTS. IT ALSO ELABORATES ON APPLICATIONS IN DATA ANALYSIS. THE LEVEL OF DETAIL OF THE EXPOSITION HAS BEEN SET SO AS TO KEEP A SURVEY STYLE, WHILE PROVIDING SUFFICIENT INSIGHTS INTO THE PROOFS SO THE READER CAN UNDERSTAND THE MECHANISMS AT WORK. THE BOOK IS ORGANIZED INTO THREE PARTS. THE FIRST PART IS DEDICATED TO THE FOUNDATIONS OF PERSISTENCE AND EMPHASIZES ITS CONNECTION TO QUIVER REPRESENTATION THEORY. THE SECOND PART FOCUSES ON ITS CONNECTION TO APPLICATIONS THROUGH A FEW SELECTED TOPICS. THE THIRD PART PROVIDES PERSPECTIVES FOR BOTH THE THEORY AND ITS APPLICATIONS. THE BOOK CAN BE USED AS A TEXT FOR A COURSE ON APPLIED TOPOLOGY OR DATA ANALYSIS.

FUNDAMENTALS OF ALGEBRAIC TOPOLOGY - STEVEN H. WEINTRAUB 2014-10-31

THIS RAPID AND CONCISE PRESENTATION OF THE ESSENTIAL IDEAS AND RESULTS OF ALGEBRAIC TOPOLOGY FOLLOWS THE AXIOMATIC FOUNDATIONS PIONEERED BY EILENBERG AND STEENROD. THE APPROACH OF THE BOOK IS PRAGMATIC: WHILE MOST PROOFS ARE GIVEN, THOSE THAT ARE PARTICULARLY LONG OR TECHNICAL ARE OMITTED, AND RESULTS ARE STATED IN A FORM THAT EMPHASIZES PRACTICAL USE OVER MAXIMAL GENERALITY. MOREOVER, TO BETTER REVEAL THE LOGICAL STRUCTURE OF THE SUBJECT, THE SEPARATE ROLES OF ALGEBRA AND TOPOLOGY ARE ILLUMINATED. ASSUMING A BACKGROUND IN POINT-SET TOPOLOGY, *FUNDAMENTALS OF ALGEBRAIC TOPOLOGY* COVERS THE CANON OF A FIRST-YEAR GRADUATE COURSE IN ALGEBRAIC TOPOLOGY: THE FUNDAMENTAL GROUP AND COVERING SPACES, HOMOLOGY AND COHOMOLOGY, CW COMPLEXES AND MANIFOLDS, AND A SHORT INTRODUCTION TO HOMOTOPY THEORY. READERS WISHING TO DEEPEN THEIR

KNOWLEDGE OF ALGEBRAIC TOPOLOGY BEYOND THE FUNDAMENTALS ARE GUIDED BY A SHORT BUT CAREFULLY ANNOTATED BIBLIOGRAPHY.

ELEMENTS OF TOPOLOGY - TEJ BAHADUR SINGH 2013-05-20

TOPOLOGY IS A LARGE SUBJECT WITH MANY BRANCHES BROADLY CATEGORIZED AS ALGEBRAIC TOPOLOGY, POINT-SET TOPOLOGY, AND GEOMETRIC TOPOLOGY. POINT-SET TOPOLOGY IS THE MAIN LANGUAGE FOR A BROAD VARIETY OF MATHEMATICAL DISCIPLINES. ALGEBRAIC TOPOLOGY SERVES AS A POWERFUL TOOL FOR STUDYING THE PROBLEMS IN GEOMETRY AND NUMEROUS OTHER AREAS OF MATHEMATICS. ELE

INTRODUCTION TO 3-MANIFOLDS - JENNIFER SCHULTENS 2014-05-21

THIS BOOK GREW OUT OF A GRADUATE COURSE ON 3-MANIFOLDS AND IS INTENDED FOR A MATHEMATICALLY EXPERIENCED AUDIENCE THAT IS NEW TO LOW-DIMENSIONAL TOPOLOGY. THE EXPOSITION BEGINS WITH THE DEFINITION OF A MANIFOLD, EXPLORES POSSIBLE ADDITIONAL STRUCTURES ON MANIFOLDS, DISCUSSES THE CLASSIFICATION OF SURFACES, INTRODUCES KEY FOUNDATIONAL RESULTS FOR 3-MANIFOLDS, AND PROVIDES AN OVERVIEW OF KNOT THEORY. IT THEN CONTINUES WITH MORE SPECIALIZED TOPICS BY BRIEFLY CONSIDERING TRIANGULATIONS OF 3-MANIFOLDS, NORMAL SURFACE THEORY, AND HEEGAARD SPLITTINGS. THE BOOK FINISHES WITH A DISCUSSION OF TOPICS RELEVANT TO VIEWING 3-MANIFOLDS VIA THE CURVE COMPLEX. WITH ABOUT 250 FIGURES AND MORE THAN 200 EXERCISES, THIS BOOK CAN SERVE AS AN EXCELLENT OVERVIEW AND STARTING POINT FOR THE STUDY OF 3-MANIFOLDS.

ALGEBRAIC TOPOLOGY - TAMMO TOM DIECK 2008

THIS BOOK IS WRITTEN AS A TEXTBOOK ON ALGEBRAIC TOPOLOGY. THE FIRST PART COVERS THE MATERIAL FOR TWO INTRODUCTORY COURSES ABOUT HOMOTOPY AND HOMOLOGY. THE SECOND PART PRESENTS MORE ADVANCED APPLICATIONS AND CONCEPTS (DUALITY, CHARACTERISTIC CLASSES, HOMOTOPY GROUPS OF SPHERES, BORDISM). THE AUTHOR RECOMMENDS STARTING AN INTRODUCTORY COURSE WITH HOMOTOPY THEORY. FOR THIS PURPOSE, CLASSICAL RESULTS ARE PRESENTED WITH NEW ELEMENTARY PROOFS. ALTERNATIVELY, ONE COULD START MORE TRADITIONALLY WITH SINGULAR AND AXIOMATIC HOMOLOGY. ADDITIONAL CHAPTERS ARE DEVOTED TO THE GEOMETRY OF MANIFOLDS, CELL COMPLEXES AND FIBRE BUNDLES. A SPECIAL FEATURE IS THE RICH SUPPLY OF NEARLY 500 EXERCISES AND PROBLEMS. SEVERAL SECTIONS INCLUDE TOPICS WHICH HAVE NOT APPEARED BEFORE IN TEXTBOOKS AS WELL AS SIMPLIFIED PROOFS FOR SOME IMPORTANT RESULTS. PREREQUISITES ARE STANDARD POINT SET TOPOLOGY (AS RECALLED IN THE FIRST CHAPTER), ELEMENTARY ALGEBRAIC NOTIONS (MODULES, TENSOR PRODUCT), AND SOME TERMINOLOGY FROM CATEGORY THEORY. THE AIM OF THE BOOK IS TO INTRODUCE ADVANCED UNDERGRADUATE AND GRADUATE (MASTER'S) STUDENTS TO BASIC TOOLS, CONCEPTS AND RESULTS OF ALGEBRAIC TOPOLOGY. SUFFICIENT BACKGROUND MATERIAL FROM GEOMETRY AND ALGEBRA IS INCLUDED.

DIFFERENTIAL FORMS IN ALGEBRAIC TOPOLOGY - RAOUL BOTT 2013-04-17

DEVELOPED FROM A FIRST-YEAR GRADUATE COURSE IN ALGEBRAIC TOPOLOGY, THIS TEXT IS

AN INFORMAL INTRODUCTION TO SOME OF THE MAIN IDEAS OF CONTEMPORARY HOMOTOPY AND COHOMOLOGY THEORY. THE MATERIALS ARE STRUCTURED AROUND FOUR CORE AREAS: DE RHAM THEORY, THE CECH-DE RHAM COMPLEX, SPECTRAL SEQUENCES, AND CHARACTERISTIC CLASSES. BY USING THE DE RHAM THEORY OF DIFFERENTIAL FORMS AS A PROTOTYPE OF COHOMOLOGY, THE MACHINERIES OF ALGEBRAIC TOPOLOGY ARE MADE EASIER TO ASSIMILATE. WITH ITS STRESS ON CONCRETENESS, MOTIVATION, AND READABILITY, THIS BOOK IS EQUALLY SUITABLE FOR SELF-STUDY AND AS A ONE-SEMESTER COURSE IN TOPOLOGY.

TOPOLOGY, GEOMETRY, AND GAUGE FIELDS - GREGORY L. NABER 2013-04-17

LIKE ANY BOOKS ON A SUBJECT AS VAST AS THIS, THIS BOOK HAS TO HAVE A POINT-OF-VIEW TO GUIDE THE SELECTION OF TOPICS. NABER TAKES THE VIEW THAT THE REKINDLED

INTEREST THAT MATHEMATICS AND PHYSICS HAVE SHOWN IN EACH OTHER OF LATE SHOULD BE FOSTERED, AND THAT THIS IS BEST ACCOMPLISHED BY ALLOWING THEM TO COHABIT. THE BOOK WEAVES TOGETHER RUDIMENTARY NOTIONS FROM THE CLASSICAL GAUGE THEORY OF PHYSICS WITH THE TOPOLOGICAL AND GEOMETRICAL CONCEPTS THAT BECAME THE MATHEMATICAL MODELS OF THESE NOTIONS. THE READER IS ASKED TO JOIN THE AUTHOR ON SOME VAGUE NOTION OF WHAT AN ELECTROMAGNETIC FIELD MIGHT BE, TO BE WILLING TO ACCEPT A FEW OF THE MORE ELEMENTARY PRONOUNCEMENTS OF QUANTUM MECHANICS, AND TO HAVE A SOLID BACKGROUND IN REAL ANALYSIS AND LINEAR ALGEBRA AND SOME OF THE VOCABULARY OF MODERN ALGEBRA. IN RETURN, THE BOOK OFFERS AN EXCURSION THAT BEGINS WITH THE DEFINITION OF A TOPOLOGICAL SPACE AND FINDS ITS WAY EVENTUALLY TO THE MODULI SPACE OF ANTI-SELF-DUAL $SU(2)$ CONNECTIONS ON S^4 WITH INSTANTON NUMBER -1 .