

TABLE OF CONTENTS

PREFACE	v	
SECTION 1	INTRODUCTION	1
CLAUDI ALSINA	Why the Professor Must be a Stimulating Teacher: Towards a New Paradigm of Teaching Mathematics at University Level	3
ROBYN ZEVENBERGEN	Changing Contexts in Tertiary Mathematics: Implications for Diversity and Equity	13
JAN THOMAS	Policy Issues	27
POLICY CASE STUDIES		
JEAN-LUC DORIER & VIVIANE DURAND-GUERRIER	Policy Issues Concerning Teaching at University Level In France	37
XIANG LONGWAN	Mathematics Education In Chinese Universities	45
ANDERS TENGSTRAND	Policy In Sweden	49
SECTION 2	PRACTICE	57
JOEL HILLEL	Trends in Curriculum: A Working Group Report	59
JOHN MASON	Mathematical Teaching Practices At Tertiary level: Working Group Report	71
LEIGH WOOD	The Secondary-Tertiary Interface	87
LARA ALCOCK & ADRIAN SIMPSON	The Warwick Analysis Project: Practice and Theory	99
HARVEY KEYNES & ANDREA OLSON	Professional Development for Changing Undergraduate Mathematics Instruction	113
MARC LEGRAND	Scientific Debate In Mathematics Courses	127
KEN MILLETT	Making Large Lectures Effective: An Effort to Increase Student Success	137

MOGENS NISS University Mathematics Based on Problem-Oriented Student Projects: 25 Years of Experience with the Roskilde Model	153
DAVID SMITH The Active/Interactive Classroom	167
DEPARTMENTAL PROFILES	
JOEL HILLEL Concordia University, Montreal, Canada	179
URS KIRCHGRABER Eidgenössische Technische Hochschule, Zurich, Switzerland	185
NESTOR AGUILERA & ROBERTO MARCIAS Universidad Nacional Del Litoral, Santa Fe, Argentina	191
Universiti Teknologi Malaysia, Malaysia	195
MARTTI PESONEN University of Joensuu, Finland	199
SECTION 3	RESEARCH
MICHÉLE ARTIGUE What Can We Learn from Educational Research at the University Level?	207
ALAN SCHOENFELD Purposes and Methods of Research in Mathematics Education	221
ANNIE SELDEN & JOHN SELDEN Tertiary Mathematics Education Research and Its Future	237
JEAN-LUC DORIER & ANNA SIERPINSKA Research into the Teaching and Learning of Linear Algebra	255
ED DUBINSKY & MICHAEL MCDONALD APOS: A Constructivist Theory of Learning In Undergraduate Mathematics Education Research	275
ALINE ROBERT & NATASHA SPEER Research on the Teaching and Learning of Calculus/Elementary Analysis	283
SECTION 4	MATHEMATICS AND OTHER DISCIPLINES
LYNN STEEN Revolution by Stealth: Redefining University Mathematics	303
JEAN-PIERRE BOURGUIGNON Mathematics And Other Subjects	313

BURKHARD KÜMMERER		
Trying the Impossible: Teaching Mathematics To Physicists And Engineers		321
JOHNNY OTTESEN		
Do Not Ask What Mathematics Can do for Modelling. Ask What Modelling Can do for Mathematics!		335
SECTION 5	TECHNOLOGY	347
KAREN KING, JOEL HILLEL & MICHÈLE ARTIGUE		
Technology: A Working Group Report		349
JOAN GARFIELD, BETH CHANCE & J. LAURIE SNELL		
Technology in College Statistics Courses		357
JOEL HILLEL		
Computer Algebra Systems in the Learning and Teaching of Linear Algebra: Some Examples		371
ERIC MULLER		
Reflections on the Sustained Use of Technology in Undergraduate Mathematics Education		381
PHILLIP KENT & RICHARD NOSS		
Finding a Role for Technology in Service Mathematics for Engineers and Scientists		395
SECTION 6	ASSESSMENT	405
KEN HOUSTON		
Assessing Undergraduate Mathematics Students		407
JIM RIDGWAY, MALCOLM SWAN & HUGH BURKHARDT		
Assessing Mathematical Thinking Via FLAG		423
CHRIS HAINES & KEN HOUSTON		
Assessing Student Project Work		431
SECTION 7	TEACHER EDUCATION	443
HONOR WILLIAMS		
Preparation of Primary and Secondary Mathematics Teachers: A Working Group Report		445
THOMAS COONEY		
Using Research to Inform Pre-Service Teacher Education Programmes		455

CATHY KESSEL & LIPING MA Mathematicians and the Preparation of Elementary Teachers	467
MICHEL HENRY & BERNARD CORNU Mathematics Teachers' Education in France: From Academic Training to Professionalization	481
BERNARD HODGSON The Mathematical Education of School Teachers: Role and Responsibilities of University Mathematicians	501
MARC LEGRAND On The Training of French Prospective University Teachers	519
JOHN MASON Professionalisation of Teaching in Higher Education in the United Kingdom	529
ERIC WITTMANN The Alpha and Omega of Teacher Education: Organizing Mathematical Activities	539
INDEX	553