#### CONTENTS

Preface, xi

# 1 SCIENTIFIC ENGLISH 1

Language as a Tool of Science, 1 The Communication Range of Scientific English, 3 The Legacy of Scientifically Plain English, 7 The Human Dimension of Scientific English, 11 Scientific English in Action, 16 Objectivity and Precision, 18 Clarity and Coherence, 31 Simplicity and Conciseness, 38 Misused Words and Phrases, 43 Punctuation, 51 Scientific English as a Dynamic Instrument, 52

## 2 LABORATORY NOTES 56

Purpose of Laboratory Notes, 56 Notebooks in the Workplace and Educational Settings, 57 Legal and Ethical Responsibility in Laboratory Notes, 58 Permanence of Notebooks and Notes, 60 Notebook Organization and Entries, 61 Electronic Note Taking, 75 Laboratory Reports, 76 From Laboratory Records to Other Communications, 79

# 3 WORKPLACE SCIENTIFIC WRITING: LETTERS, MEMORANDA, AND ABSTRACTS 81

The Roles of Workplace Scientific Writing, 81 Job Application Letters and Résumés, 83 Inquiry Letters, 90 Technical Memoranda, 94 Research Abstracts, 98 The Practicality of Workplace Scientific Writing, 104

### 4 UNDERGRADUATE REPORTS IN THE SCIENCES 106

What Is a College Report in the Sciences? 106 Features of Scientific Reports Shared with Other Disciplines, 107 Unique Features of Scientific Reports, 108 Scientific Report Writing as a Human Process, The Writing Situation: What Is Expected? 112 Working with Others: Collaborative Scientific Reports, 113 The Recursive Stages of Writing a Research Report, 114 Research and Writing: Asking the Right Questions, 115 Getting Started: Topic and Source Decisions, 116 Types of Sources and Their Uses, 118 Electronic Sources, 128 Planning and Drafting the Report: Answering the Questions, 133 Making Choices about Reportorial Modes of Development, 137 Beginnings, Middles, and Endings, 139 Parceling a Report's Contents with Headings, 142 Additional Elements for Reports that Are Formal, Writing the Draft and Meeting Reader Expectations, 147 Copy: Reviewing, Editing, Revising, and Proofreading, 149 Being Thorough from Start to Finish, 151

#### 5 DOCUMENTATION OF SCIENTIFIC SOURCES 152

The Importance of Bibliographic Documentation, 152 Citing
Responsibly: Selectivity, Accuracy, and Completeness, 153 Examples of
Citation Styles in a List of References, 154 Sources Other than Articles
and Books, 161 Electronic Citations, 164 Citations in Text, in Visuals,
and in Bibliographic Notes, 168 Citations as a Reflection of
Professionalism, 172

#### 6 SCIENTIFIC VISUALS 174

The Importance of Scientific Visuals, 174 Purposes Served by Visuals in Scientific Papers, 175 Planning and Designing Visuals, 176 Preparing Tables, 177 Preparing Figures, 183 Weighing Options and Meeting Visual Expectations, 191

#### 7 SCIENTIFIC PRESENTATIONS 194

The Professional Value of Scientific Presentations, 194 Unique Benefits of Oral Presentations, 195 Timing, 197 Speaking, 198 Writing, 199 Viewing, 203 Poster Presentations, 207 Preparing for an Audience, 210

## 8 SCIENTIFIC DISSERTATIONS 213

The Role of Writing in Graduate Scientific Education, 213 Learning Scientific Writing in Graduate School, 214 Qualities that Define a Scientific Dissertation, 216 The Parts and Structure of a Scientific Dissertation, 217 Traditional Features of Front Matter, 218 IMRAD Expository Style of Chapters, 223 After the Dissertation, 239

## 9 SCIENTIFIC JOURNAL ARTICLES 240

Professional Importance of Journal Articles in the Sciences, 240
Scientific Journals and Their Articles, 242 The Features of a Scientific Journal Article, 243 Wording the Title, 244 Author Byline and Affiliation, 246 Preparing the Abstract, 247 Acknowledgments, 249 Main Text: IMRAD Structure, Style, and Content Editing, 251
Ethical Publication in Science, 264 Final Considerations on the Scientific Publication Process, 269

#### 10 SCIENTIFIC GRANT PROPOSALS 271

What Is a Scientific Grant Proposal? 271 Guiding Parameters in Preparing a Proposal, 273 Conventional Parts of a Grant Proposal, 274 Proposal Title and Summary, 276 Revisions in Resubmitted

#### Contents

Proposals, 281 References in a Proposal, 282 Introduction and Background, 284 Design and Methodology of the Proposed Work, 288 Budget Preparation, 292 The Challenge and Responsibility of Grant Preparation, 294

Notes, 297

References, 307

Index, 315