

Style and Ethics of Communication in Science and Engineering

Jay D. Humphrey
Texas A&M University

Jeffrey W. Holmes
University of Virginia

SYNTHESIS LECTURES ON ENGINEERING #9



MORGAN & CLAYPOOL PUBLISHERS

Contents

1.	Motivation	1
2.	Writing Well	5
2.1	Overall Approach	5
2.1.1	Outline	5
2.1.2	Write Freely	7
2.1.3	Edit Critically	8
2.1.4	Read Out Loud	8
2.1.5	Have a Colleague Proofread	9
2.2	Removing Redundancies and Unnecessary Words	10
2.3	Active Voice, First Person, and Different Tenses	15
2.3.1	Voice	15
2.3.2	Person	19
2.3.3	Tense	21
2.4	Infinitives and Modifiers	22
2.4.1	Infinitive	22
2.4.2	Modifiers	23
2.5	Additional Issues of Word Choice	26
2.6	Punctuation, Abbreviations, and Foreign Languages	30
2.6.1	Exploit Methods of Punctuation	30
2.6.2	Abbreviations	32
2.6.3	Foreign Languages	33
2.7	Footnotes, Quotations, and Proper Citation	35
2.7.1	Footnotes	35
2.7.2	Quotations	35
2.7.3	Proper Citation	36
2.8	Vocabulary	36
2.9	Closure	40

3.	Scientific Publications	41
3.1	Basic Content	41
3.1.1	Cover Page and Letter to Editor	41
3.1.2	Results	42
3.1.3	Methods (or Materials and Methods)	44
3.1.4	Discussion and Conclusion	45
3.1.5	Introduction	47
3.1.6	Abstract	48
3.1.7	Acknowledgments	49
3.1.8	Appendices	49
3.1.9	References	50
3.1.10	Figures and Tables	50
3.2	Publishing an Archival Journal Paper	52
3.2.1	Origin	53
3.2.2	Composition and Authorship	53
3.2.3	Submission and Review	54
3.2.4	Revision	54
3.2.5	Typesetting, Galley Proofs, and Proofreader Marks	56
3.2.6	Copyright, Permissions, and Page Charges	57
3.3	Thesis or Dissertation	58
3.4	Technical Reports	59
4.	Proposals and Grant Applications	61
4.1	Introduction	63
4.2	Types of Grants	63
4.3	The Review Process	63
4.4	The NIH R01 Grant	64
4.4.1	Specific Aims	67
4.4.2	Background and Significance	68
4.4.3	Preliminary Results	68
4.4.4	Research Plan	69
4.4.5	References	70
4.5	The Preproposal	72
4.6	Summary	73
	Appendix	74
		76

5.	Oral Communication	77
5.1	Effective Styles	77
5.2	The 15-Minute Presentation	82
5.3	Summary	84
6.	Authorship	85
6.1	The Slutsky Case	85
6.2	Basic Conventions	86
6.2.1	Order of Authors	86
6.2.2	Submission Agreement	87
6.2.3	Publication Impact	87
6.3	Common Problems	88
6.3.1	Expectations	88
6.3.2	Gift, Guest, and Ghost Authorship	89
6.3.3	Financial Support	91
6.3.4	Quid Pro Quo	91
6.3.5	Students and Technicians	92
6.4	Current Standards and Emerging Ideas	93
6.4.1	International Committee of Medical Journal Editors Standards	93
6.4.2	Author Notification	94
6.4.3	Specifying Contributions	95
6.4.4	Quantifying Contributions	96
6.5	Our Approach	96
6.5.1	Authorship Criteria	97
6.5.2	Predraft Group Meeting	97
6.5.3	Final Review and Approval	97
6.5.4	Default Position for Abstracts	98
7.	Recordkeeping	99
7.1	The Slutsky Case Revisited	99
7.2	Why Keep Records?	102
7.2.1	Medical Records	103
7.2.2	Industry Research Records	104
7.2.3	Academic Research Records	104

7.3	Electronic Data	105
7.3.1	Date-Stamped, Time-Stamped, and Backup Systems	106
7.3.2	Images	106
7.3.3	Software Development	106
7.4	Fraud: Fabrication and Falsification	107
7.4.1	Retaining or Discarding Data	108
7.4.2	Image Manipulation	109
7.4.3	Statistical and Image Forensics	110
8.	Ownership of Ideas, Data, and Publications	111
8.1	Data and Resource Sharing	112
8.1.1	Research Data	112
8.1.2	Model Organisms	113
8.1.3	Other Research Products	113
8.2	Copyright	114
8.2.1	Online Publishing	115
8.2.2	Public Access to NIH-Funded Journal Articles	115
8.3	Patents	118
8.3.1	Patents and Publicly Funded Research	119
8.3.2	Patents and Publication	120
8.4	Plagiarism	121
8.4.1	Attribution Within a Research Group	122
8.4.2	Citation	123
8.5	Peer Review	124
8.5.1	Archival Journal Articles	124
8.5.2	Grants	126
	References	129
	Author Biography	131
	Index	133