

# Scientific Writing Course

ATTAR is of the view that giving participants in a training course just the presentation slides to take away with them does not provide them with the best opportunity to reinforce their learning once they are back in the workplace. A slide can be meaningless when divorced from the context set by the facilitator during training. To maximise the opportunity for post-training reinforcement, ATTAR provides each participant with a guide that doubles as a textbook. All the topics covered in the course are treated at length in the guide, but the guide also includes many other topics (all relevant to language and communication). Thus the guide can be used both to reinforce what participants learn during the course and to provide an opportunity, through self-paced study, to build on that learning.

The table of contents from the guide is reproduced below.

For more information about this course, call (03) 9574 6144 or send an email to [training@attar.com.au](mailto:training@attar.com.au).

## Contents

<b>1 Introduction</b>	<b>8</b>
About the course	8
Course objectives	8
Why writing matters in science	8
Why good writing matters in science	9
Why good writing should matter to you	9
<b>2 General Principles of Good Scientific Writing</b>	<b>11</b>
Objectives	11
Content and manner (what and how)	11
Truth	11
Logic	12
Manner: maximum communicative efficiency	12
Essential attributes of good scientific writing	12
Clarity	13
Ambiguity	13
Vagueness	17
Familiarity	18
Familiar vocabulary	18
Familiar meaning	20
Familiar idioms	21
Familiar spelling and punctuation	21
Familiar typography	21
Familiar numerical representation, units and symbols	22

Economy	22
Verbosity	22
Triviality	23
Redundancy	23
Tautology	23
Padding	24
Neutrality	24
Techniques for avoiding sexism	25
Consistency	26
The principle of single and distinct denotation	26
But what about correct writing?	27
Putting practices and conventions into perspective	29
The primacy of communicative efficiency	30
Summary	30
Exercise 1	32
<b>3 The Language of Language</b>	<b>34</b>
Objectives	34
The importance of knowing the language of language	34
The parts of speech	35
Nouns	35
Pronouns	38
Verbs	41
Adjectives	45
Adverbs	47
Conjunctions	48
Prepositions	49
Determiners	49
Interjections	50
The part of speech can depend on the context	50
Person	51
Structural elements	51
Phrase	51
Clause	52
Sentence	53
Paragraphs	55
Exercise 2	61
<b>4 Scientific Documents: Types &amp; Structure</b>	<b>63</b>
Objectives	63
What is scientific writing?	63
Structure in general	64
The extended IMRAD structure	65
Preliminary matter	66
Introduction	71
Materials and Methods	73
Results	75
Discussion	77
Conclusion	78
Back matter	79
Summary of typical structure	80

Applying for a grant	81
What grant assessors are mostly looking for	81
The anatomy of a typical grant application	82
Citation systems and styles	82
The author–date system	83
Vancouver system	84
Other citation systems	85
Bibliographies and reference lists	85
Citation and footnotes	85
Style guidelines: author–date system	85
Style guidelines: Vancouver system	88
Citation–name system	90
Getting started: overcoming writer’s block	90
Project journal	90
Edward Albee technique	91
Brainstorming	92
Mind mapping	92
Outlining	93
Common problems in scientific reports	94
Poor logic	94
Sloppy citing and referencing	96
Plagiarism and fabrication	96
Day 1 Wrap-up	98
<b>5 Aspects of Grammar</b>	<b>100</b>
Objectives	100
Grammar: what is it?	100
Some old rules not worth worrying about	101
Splitting infinitives	101
Stranded prepositions	101
Beginning a sentence with <i>and</i> or <i>but</i>	102
Revisiting <i>be</i>	103
Common problems of grammar	103
Verb–subject agreement	104
Interrogatives	114
Subject–pronoun agreement	114
Relative clauses	115
Comparatives and superlatives	117
Exercise 3	121
<b>6 Obstacles to Readability</b>	<b>123</b>
Objectives	123
The two principal elements in writing	123
The roots of good style	124
Common problems	125
Sentence length	125
Overly dense sentences	128
Misplaced jargon	129
Overly pre-modified nouns	130
Noun clustering	131
Nominalisation	133

Voice: active or passive?	134
Impersonal constructions	137
Register	137
Summary	138
<i>Instructions for Authors</i>	138
Readability and document design	139
Designing for maximum comprehension	139
Online or print?	141
Readability formulas	142
<i>Flesch Reading Ease Formula</i> (FREF)	143
Readability statistics and passive sentences	145
Exercise 4	147
<b>7 Punctuation Refresher</b>	<b>150</b>
Objectives	150
Terminology	150
The purpose of punctuation	151
Grammatical purpose	151
Emphatic purpose	151
Is punctuation important?	151
Vital punctuation	151
Discretionary punctuation	152
Fads worth forgetting	153
Descriptor fragments in parentheses or between dashes	153
Colons introducing a run-on list	154
Over-capitalisation	155
Lazy quotes	155
Solidus (/): a mark to be mostly avoided	156
Singular–plural composites	157
Where punctuation is vital to meaning	157
Apostrophes	158
En dashes	161
Marking off parenthetical material	163
Dashes and similar characters: a summary	166
Commas in general	166
Serial commas: sometimes they are important	169
Hyphens and compound adjectives	170
Semicolons	172
Colons	173
Other punctuation marks	176
Brackets	176
Ellipsis (aka ellipsis points)	178
Quotation marks (aka inverted commas)	179
Exercise 5	185
Exercise 6: Dissect a report	187
Open Forum & Course Wrap-up	190

<b>A</b>	<b>Answers to Exercises</b>	<b>192</b>
	Exercise 1	192
	Exercise 2	193
	Exercise 3	195
	Exercise 4	197
	Exercise 5	198
	Exercise 6	199
<b>B</b>	<b>Bloated Language</b>	<b>202</b>
<b>C</b>	<b>Numbers, Symbols &amp; Measurements</b>	<b>205</b>
	Words or numerals?	205
	Fractions	206
	Percentages	206
	Dates and time	206
	Digit separators	208
	Numbers in equations	209
	Types of symbols	210
	Quantity symbols: variables and physical constants	210
	Unit symbols: symbols of measurement	210
	Descriptive symbols	213
<b>D</b>	<b>Variants of the English Language</b>	<b>214</b>
	American English	214
	British English	216
	Other variations	216
<b>E</b>	<b>Entering Uncommon Characters</b>	<b>217</b>
	How do I find the code for a Unicode character?	218
	Entering a Unicode character	219
	Sample characters	220
	What about the web?	221
<b>F</b>	<b>Troublesome Words</b>	<b>222</b>
<b>G</b>	<b>Ethical Issues in Scientific Writing</b>	<b>233</b>
	Ethics: what is it?	233
	Some definitions	233
	Some ethical issues in scientific writing	233
	Plagiarism	234
	Credit all contributors	235
	COPE's view on authorship	237
	Other ethical issues	237
<b>H</b>	<b>Bibliography</b>	<b>240</b>
	Index	241