

# **DR. ROSMAWATI BINTI NAIM**

Dr. Rosmawati Naim, obtained her B.Sc. (2000), M. Sc.

(2005) and PhD (2014) in Gas Engineering from Universiti Teknologi Malaysia (UTM). She has experience working in the oil and gas industry as a laboratory engineer with Scomi Oiltools in 2006. Later she joined the Faculty of Chemical & Natural Resources Engineering, Universiti Malaysia Pahang where she is currently worked as senior lecturer. She specializes in the development and fabrication of hollow fiber membrane for carbon dioxide absorption and stripping via membrane contactor application. She has authored and co-authored over 10 publications including Journal of Membrane Science, Journal of Hazardous Materials, Separation and Purification Technology and Chemical Engineering Research & Design. She also co-authored several book chapters published in CRC Press and Springer Publisher.

### **INSTITUTE OF POSTGRADUATE STUDIES UNIVERSITI MALAYSIA PAHANG** Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia. Tel: +609-549 3197/3198/3199 Fax: +609-549 3190

Email: ips@ump.edu my Website: ips.ump.edu.my





PUBLISHER **UNIVERSITI MALAYSIA PAHANG** 





# SCIENTIFIC WRITING (ENGINEERING)

# **ROSMAWATI NAIM**



## **SCIENTIFIC WRITING** (ENGINEERING)

# **SCIENTIFIC WRITING** (ENGINEERING)

**ROSMAWATI NAIM** 

Penerbit Universiti Malaysia Pahang Kuantan 2017 Copyright © Universiti Malaysia Pahang, 2017

First Published, 2017

#### All right reserved.

Apart from fair dealing for the purpose of study, research, criticism or review, as permitted under the Copyright Act, no part of this book may be reproduced, strored in a retrieval system, or transmited, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the publisher. Enquiries to be made to the author and the publisher Penerbit Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang Darul Makmur. Negotiation is subject to royalty arrangement or honorarium.

Perpustakaan Negara Malaysia
Rosmawati Naim
SCIENTIFIC WRITING (ENGINEERING) / Rosmawati Naim.
ISBN 978-967-2054-17-7
1. Technical writing. 2. Communication of technical information.
3. Communication in engineering I. Title
808.0665

#### Published By: Publisher

Universiti Malaysia Pahang Lebuhraya Tun Razak, 26300 Gambang Kuantan, Pahang Darul Makmur Tel: 09-549 3273 Fax: 09-549 3281

#### Printing:

Syarikat Percetakan Inderapura Sdn. Bhd Jalan Tanjong Api Off Jalan Telok Sisek 25200 Kuantan, Pahang Darul Makmur Tel: 09-5177225/5177031 Fax: 095139434

#### PREFACE

The rebranding of 8 modules has been approved by the UMP Senate in February 2016. The 8 modules comprise:

- i. Philosophy of Science and Ethics in Research
- ii. Research Overview
- iii. Literature Review
- iv. Methodology
- v. Data Collection and Analysis
- vi. Scientific Writing
- vii. Preparation for viva-voce
- viii. Conceptual Paper

8 modules are one of the Institute of Postgraduate Studies (IPS) initiatives in helping students to understand ways and means to carry out research at Master's and PhD level. There are 2 sets of 8 modules provided by IPS in accordance with the technology and engineering cluster. These 8 modules are intended to help students in conducting systematic research owing to its utmost importance in determining the effectiveness and efficiency of the research process. The 8 modules shall help students to understand the research problem and identify the areas of research. The modules also assist students on how to write a literature review in order to understand how other researchers approach, define or manage the problem to keep the research pertinent to what is current in the field. In addition, 8 modules also facilitate students to understand the methods of collecting data in an organized and controlled way to achieve valid results, analyze the data according to the considered problem and make conclusions. Therefore, IPS hopes that these modules will be able to provide some insights and benefit students in conducting research at Master's and PhD level.

INSTITUTE OF POSTGRADUATE STUDIES UNIVERSITI MALAYSIA PAHANG

•

#### **TABLE OF CONTENTS**

Module Description Module Outcomes Module Subtopic	vii vii vii
-	
Topic 1: Importance of Scientific Writing	1
1.1 Scopes and the Needs for Scientific Writing	1
1.2 Why Need to Publish Your Result?	2
1.3 Doing the Writing	2
Topic 2:Types of Scientific Writing	5
2.1 Review Paper	5
2.2 Technical Paper	6
2.3 Book Chapter	6
2.4 Proceeding (Abstract, Extended Abstract)	6
2.5 Thesis	7
Topic 3: Structure of a Good Scientific Manuscript	9
3.1 Organization of a Scientific Manuscript	9
3.2 Title Selection	9
3.3 Abstract/ Keywords	10
3.4 Introduction	12
3.5 Experimental/ Methodology	12
3.6 Results and Discussions	13
3.7 Conclusions	13
3.8 Acknowledgments	13
3.9 References	14
Topic 4: Style of Language	15
4.1 Style of Language	15
4.2 Tenses	15
Activity 4.1	19
4.3 Active Versus Passive Voice	19
Activity 4.2	22
4.4 Cohesion	23
4.5 Paraphrasing	24
4.6 Summarizing and Synthesizing	24
Activity 4.3	25
Topic 5: Ethics In Scientific Writing	27
5.1 Ethics In Scientific Writing	27
5.2 Plagiarism	27
5.3 Strategies to Avoid Plagiarism	28
5.4 Other Ethical Consideration Issues	29

Topic 6: Getting Your Manuscript Published	31
6.1 Selecting a Target Journal	31
6.2 Submitting a Manuscript	31
6.3 Submission for Corrections	33
6.4 Addressing Reviews Comments	34
6.5 Decision Letter	38
Conclusion	43
References and Further Readings	45

#### **MODULE DESCRIPTION**

This module provides an overview on how to write a good scientific manuscript. There are 5 main sections outlined in this module which includes Section 1: Importance of Scientific Writing, Section 2: Types of Scientific Writing, Section 3: Content of Good Scientific Manuscript, Section 4: Scientific Style of Language and Section 5: Ethics in Scientific Writing. Section 1 explains the needs and purpose of writing a scientific article in the research and academic field. Section 2, several types of scientific writing are discussed and presented while Section 3 explains on the attributes of a good content outline used in the scientific manuscript. Section 4 emphasizes on the usage of proper English language in term of nouns and punctuations. Section 5 reflects in details the common ethical issue in writing research articles. Lastly, proper selection of journal and submission process for the journal is highlighted in Section 6.

#### **MODULE OUTCOMES**

At the end of this module, user should be able to:

- 1. Identify the needs and purpose of scientific writing
- 2. Differentiate types of scientific manuscripts
- 3. Outline the content of scientific manuscript
- 4. Apply correct language functions in scientific manuscript
- 5. Identify ethical issues relating to scientific writing
- 6. Identify suitable journal for submission and getting the manuscript published

#### **MODULE SUBTOPIC**

- ✓ Topic 1 Importance of Scientific Writing
- ✓ Topic 2 Types of Scientific Writing
- ✓ Topic 3 Structure of a Good Scientific Manuscript
- ✓ Topic 4 Style of Language
- ✓ Topic 5 Ethics in Scientific Writing
- ✓ Topic 6 Getting Your Manuscript Published
- ✓ Conclusion
- ✓ References and further reading

•