



**Faculty of Engineering**

**Thesis Guidelines: Styles and Formats for Postgraduate Studies  
Programme at Universiti Malaysia Sarawak**

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**Doctor of Philosophy  
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Thesis Guidelines: Styles and Formats for Postgraduate Studies Programme at  
Universiti Malaysia Sarawak

Mahmud Arif

A thesis submitted

In fulfillment of the requirements for the degree of Doctor of Philosophy

(Antenna and Propagation)

Faculty of Engineering  
UNIVERSITI MALAYSIA SARAWAK  
2020

## DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

.....

Signature

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Faculty of Engineering

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Date :

## **ACKNOWLEDGEMENT**

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## **ABSTRACT**

The abstract is a summary of the thesis, which consists of a brief introduction, problem statement, investigation methods, results and the general conclusion. The abstract should be informative and clear as reference to others. It should be written in a single paragraph and the maximum page number is 2 pages. Font type is Times New Roman and the font size is 12. Line spacing is double-spacing with a maximum of two-page long. Keywords of up to 5 words should be provided. For a thesis written in English, a translated version of the abstract in Malay should be provided and vice versa. The translated version of the abstract should have the thesis title.

**Keywords:** Summary, format, font size, abstract, keywords

***Garis panduan Tesis: Gaya dan Format untuk Program Pengajian Pascasiswazah***

***ABSTRAK***

*Abstrak adalah ringkasan tesis, mengandungi pengenalan, kenyataan permasalahan, kaedah penyasatan, keputusan dan kesimpulan umum. Abstrak hendaklah informatif dan jelas sebagai rujukan. Ianya mesti ditulis dalam satu perenggan dan maksimum mukasurat adalah dua mukasurat. Jenis fon adalah Times New Roman dan saiz fon adalah 12. Jarak baris adalah baris berganda dengan panjang maksimum dua mukasurat. Kata kunci sehingga 5 patah perkataan hendaklah diberikan. Bagi tesis yang ditulis di dalam Bahasa Inggeris, versi terjemahan dalam Bahasa Melayu hendaklah diberikan dan sebaliknya. Abstrak yang telah diterjemahkan mesti mengandungi tajuk tesis.*

***Kata kunci:*** *Kesimpulan, format, saiz fon, abstrak, kata kunci*

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## **LIST OF ABBREVIATIONS**

CGS	Centre for Graduate Studies
UNIMAS	Universiti Malaysia Sarawak

# CHAPTER 1

## INTRODUCTION

### 1.1 Study Background

The objective of the template you are currently using is to provide a tool to prepare the largest document you are ever likely to have to manage. The template is an experiment and a work in progress. We hope you will be able to download this document, cut and paste your own content into the template, and then use the format paintbrush for the text, headings and sub-headings, table headings, table format, figure headings etc. The real goal is to lower the overall stress of producing something that meets the various demands of the university and academic communities.

A thesis/dissertation is a form of expository writing. As a piece of intellectual work, it seeks to document the student's exploration of a question significant to a particular discipline or set of disciplines in a way that is organized and discipline-appropriate. Every thesis should begin with Chapter 1 entitled Introduction. The Introduction typically includes the background to the work, an introduction to the overarching themes and concepts, and goals of the dissertation. The Introduction also provides the reader with a description of the structure of the document, by describing the sequence of the chapters, and possibly a brief description of the intention of each.

### 1.2 Problem Statement

There are many formats available for writing final thesis. The formats have been introduced to assist postgraduate students in preparing their thesis. However, the formats are unique and could not be used for other universities. Therefore, a standard format for every

Universiti Malaysia Sarawak (UNIMAS) student to follow will enable all postgraduate students to produce their thesis according to the format set by the university.

### **1.3 Objectives**

The guidebook aims to assist postgraduate research students in writing their final thesis. This can be achieved through the following set of objectives:

- i. To identify important components of thesis
- ii. To formulate a standard format for thesis writing
- iii. To propose a guidebook for thesis writing

### **1.4 Chapter Summary**

This chapter has provided the general introduction about this guidebook which serves as reference to all postgraduate students at UNIMAS. All students are required to use this guidebook as their reference.

## CHAPTER 2

### FORMAT OF THE THESIS

#### 2.1 Overview

Format of the thesis will provide information on how the thesis should be written. It consists of Language and Units, Margin, Typing, Pagination, Paper and Thesis Structure. These will be explained further in the following subsections.

#### 2.2 Language and Units

The language of the thesis should be as direct and simple, as the subject matter will allow. The thesis must be written: in either **English** or **Bahasa Malaysia**.

For thesis written in English, the language used must be fully **British or American style**, and not a mixture of both.

All units of measurement must be in the **metric system**.

#### 2.3 Typing

Typing format must be fully adhered by all students. The font type and size must follow the given format and the final submitted must be produced in high quality printing.

##### 2.3.1 Font

All students are to use **Times New Roman (font size 12) only** in their theses. In certain cases, the use of other font types may be considered upon approval by the Faculty Graduate Committee.

### 2.3.2 Spacing

The thesis should be typed on one side of the page. The text should be **double-spaced** throughout, including explanatory footnotes, long quotations, appendices, headings and subheadings. However, **legends, captions or keys to tables, figures, or plates** should be **single-spaced**.

### 2.3.3 Type Quality

Both copies of the thesis submitted for examination or binding must be printed using **laser printer**.

## 2.4 Margins

The **top, bottom and left-hand page margins** of all pages should be **3 cm** wide, with the **right-hand** page margin should be **2.5 cm** wide.

## 2.5 Pagination

Pagination should be given to all pages **excluding** the cover page and the title page. Pages should be numbered consecutively throughout the thesis, including pages of figures, tables and appendices.

- i. Pagination begins with the first page of Chapter 1.
- ii. Preliminary pages (i.e. those preceding Chapter 1) must carry page numbers in small Roman numerals (i, ii, iii, etc.).
- iii. Page numbers should be centered at the bottom of the page and should be at least 20 mm from the edge of the page.
- iv. Page numbers should appear by themselves and are not to be enclosed in parentheses, hyphens, etc.

- v. Each appendix should be identified separately in alphabetical order.
- vi. The pages of the appendices should also be typed according to the above pagination system.

## 2.6 Paper

White, good-quality **A4 size**, (8.27” x 11.69” or 21.0 cm x 29.7 cm) and weight of **80gm** should be used for all submitted bound copies of the thesis. Photographic illustrations should be colour-printed on good quality high-resolution paper. This paper should be acid free and “non-erasable”.

## 2.7 Inserting Tables

Number the tables by chapter; e.g. Table 1.1 and Table 1.2 to indicate the tables belong to Chapter 1. Whereas, Table 2.1 and Table 2.2 belong to Chapter 2 and so on. Title for the table should be placed above the table. Table 2.1 shows an example of a table and Table 2.2 shows an example of a long table (requires more than 1 page).

**Table 2.1:** Example of a Table

No.	Item	Unit (m)
1.	Length	5
2.	Width	4

**Table 2.2:** Example of a Long Table

S/N	Model	Frequency	Antenna Type
I	Zenstar III	Single	Built In Antenna
2	HULUX GR-213U	Single	Built In Antenna

**Table 2.2** continued

3	SkyNavSKM55	Single	Embedded Patch Antenna 25 X 25 X 4.0 Mm
4	GPS Receiver, GNS 603	Single	Internal Antenna, Provision of External Antenna
5	Garmin GPS25-HVS	Single	External
6	GISTM Stations	Dual	External

## 2.8 Inserting Figures

Number the figures by chapter; e.g. Figure 1.1 and Figure 1.2 to indicate the tables belong to Chapter 1. Whereas, Figure 2.1 and Figure 2.2 belong to Chapter 2 and so on. Title for the figure should be placed at below the table. Figure 2.1 shows an example of a figure.



**Figure 2.1:** Example of a Figure

## 2.9 Inserting Equations

Number the equation by chapter, e.g. Equation 1.1 and Equation 1.2 to indicate the tables belong to Chapter 1. Whereas, Equation 2.1 and Equation 2.2 belong to Chapter 2 and so on. Example is given below:

$$A = \pi r^2 \quad \text{Equation 2.1}$$

$$(1 + x)^n = 1 + \frac{nx}{1!} + \frac{n(n-1)x^2}{2!} + \dots \quad \text{Equation 2.2}$$

## 2.10 Bindings

Bindings of the thesis shall be the responsibility of the students. There are two (2) different types of bindings.

### 2.10.1 Bindings for Thesis Evaluation

Following acceptance and approval by the UNIMAS Graduate Studies Committee, the thesis should be ring bound in soft cover prior to examination by the internal and external examiners.

The front cover of the thesis shall be printed according to the colour of the Faculty/Institute together with the UNIMAS logo and name of the Faculty/Institute (**Appendix A**). Please refer to Appendix B for the colour of the Faculty/Institute.

### 2.10.2 Bindings of Thesis after Senate Approval

Thesis which has been accepted by the UNIMAS Senate must be submitted in hard bound. The student's name, degree and year shall also be printed on the spine of the bound thesis.

Stripes according to the colour of the Faculty/Institute shall be printed on the back cover and spine to distinguish between a PhD (3 stripes) and Master (2 stripes). Please refer to Appendix C for example.

## **2.11 Chapter Summary**

This chapter has summarized the format required for the thesis writing which must be followed by all graduate students.

## CHAPTER 3

### STRUCTURE OF THE THESIS

#### 3.1 Overview

In this chapter, structure of the thesis is explained in details. Students are advised to read and produce the thesis according to the thesis outline and chapter outline.

#### 3.2 Thesis Outline

Students should bear in mind that thesis examiners deplore overlong or verbose thesis, and the onus is on the student to provide a well-organized and well-written thesis.

Table 3.1 shows the thesis outline.

**Table 3.1:** Thesis Outline

No.	Item
i.	Title Page
ii.	Declaration
iii.	Acknowledgement
iv.	Abstract
v.	<i>Abstrak</i>
vi.	Table of Contents
vii.	List of Tables
viii.	List of Figures
ix.	List of Abbreviations
x.	Chapter 1 – Chapter 5
xi.	References
xii.	Appendix (ces)

### **3.2.1 Title Page**

The thesis title should be as concise as possible, giving an accurate description of the thesis. The standard format of the title must be in title case except for biological nomenclature.

### **3.2.2 Declaration**

Student must declaration that work done is from his/her original work with acknowledgement given for information obtained from other sources. This is also to declare that the research work has never been declared for any other degree at UNIMAS or other institution. Follow the sample given in the Declaration page.

### **3.2.3 Acknowledgement**

Most theses will include a brief statement of gratitude in recognition of special assistance (including financial) and guidance given by individuals, institutions or government bodies. Acknowledgement page should not exceed one (1) page.

### **3.2.4 Abstract**

The abstract is a summary of the entire thesis. It should briefly outline the research problems addressed by the thesis, the findings, and the significance of the work in the context of the field of study.

Abstracts in both Bahasa Malaysia and English are mandatory. The English version must include the title in English for a thesis written in Bahasa Malaysia, and vice versa.

The abstract should not exceed two (2) typewritten double-spaced pages of text consistent with the font style and size used in the main body of the thesis. The font style of the translated abstract should be in *Italics*.

### **3.2.5 Abstrak**

*This is the Malay translation of the abstract. It should have the translated title of the thesis. Refer to the Abstrak page of this guidebook.*

### **3.2.6 Table of Contents**

The titles of sections, chapters and their principal subdivisions along with the page numbers on which they appear should be listed in the Table of Contents. Titles should be worded exactly as they appear in the text of the thesis. Theses with many subsections should use a hierarchical numbering system for headings and sub-headings (e.g. 3.0, 3.1, 3.2 etc.). Such numbering system combined with the judicious use of upper and lower case, indentations and italics should indicate clear relationships between the sections of the thesis.

### **3.2.7 List of Tables**

This list consists of the exact titles (including numbering) of all tables and should be written in double-spacing format. Please refer to the List of Tables page. All tables should be numbered consecutively throughout the text based on the thesis chapter.

### **3.2.8 List of Figures**

This list consists of the exact titles (including numbering) of all figures and should be written in double-spacing format. Please refer to the List of Figures page. All figures should be numbered consecutively throughout the text based on the thesis chapter.

### **3.2.9 List of Abbreviations**

This list consists of the abbreviations used in the thesis and should be written in double-spacing format. Please refer to the List of Abbreviations page. The abbreviations should be arranged based on the alphabetical order.

### 3.2.10 References

Referencing should be done according to the format given in this guidebook. Please refer to Section 4.3 for details.

### 3.2.11 Appendix(ces)

Appendix (es) is a supplementary material attached at the end of the thesis.

## 3.3 Chapter Outline

The main body of the thesis is usually arranged into consecutively numbered chapters or sections. The internal organization of the thesis is the responsibility of the student in consultation with his/her thesis supervisor(s). The organization will partly depend on the field of study, but the onus is on the student to provide a systematic and well-organized thesis. The thesis will often include the chapters as given in Table 3.2.

**Table 3.2:** Chapter Outline

<b>Chapter</b>	<b>Item</b>
Chapter 1	Introduction
Chapter 2	Literature Review
Chapter 3	Materials and Methods
Chapter 4	Results and Discussion
Chapter 5	Conclusion and Recommendations

### 3.3.1 Introduction

The chapter provides general overview of the thesis and should end with a hypothesis (if applicable) and objectives of the study.

### **3.3.2 Literature Review**

This should highlight past studies related to the subject of the thesis. Recent publications (last 5 years) should be discussed in this chapter.

### **3.3.3 Materials and Methods**

All relevant experimental, descriptive, theoretical and analytical techniques used in the research should be outlined, such that the study could be repeated by another researcher. Reference of methods to other researchers should be made where appropriate.

### **3.3.4 Results and Discussion**

This may be presented as a single chapter, divided into appropriate section, in two or more separate chapters where it includes the analysis and presentation of data. This chapter also provides a general discussion on the results of the study, stressing the significance and implications of the findings of the research project undertaken.

### **3.3.5 Conclusions and Recommendations**

This chapter contains a brief summary of the entire work, including methods, results and major conclusions/recommendations arising from the work. The summary can be written in a single section or in separate numbered section. Recommendations for future work are optional.

## **3.4 Chapter Summary**

The structure of the thesis has been explained in this chapter and should consist of the introduction, literature review, materials and method, results and discussion and finally the conclusions and recommendations.

## CHAPTER 4

### LITERATURE CITATION AND REFERENCING

#### 4.1 Overview

Chapter 4 explains how literature citation and referencing should be written in the thesis. Proper citation and referencing must be used for any information and finding from other works cited or quoted in the thesis. UNIMAS follows the latest version of **APA or Harvard** for literature citation and referencing.

#### 4.2 Citation in Text

Author's name may be cited directly or indirectly in the text. There will also be a situation when no author's name is available. The followings will explain how citation should be done.

##### 4.2.1 Direct Citation of Author's Name in Text

In the text, the year of publication appears within parentheses after the author's surname if the latter forms part of a sentence. For example:

- i. Abdul (1986) or
- ii. Abdul and Abidin (1987) – where there are only two authors or,
- iii. Abidin et al. (1990) – where there are more than two authors
- iv. Abdul et al. (1990); Abidin et al. (1991)

If several papers by the same author(s) and from the same year are cited, the letters a, b, c, etc. should be put after the year of publication. For example:

- i. Abdul and Abidin (2017a) and

- ii. Abdul and Abidin (2017b)

Both the author's surname and the year of publication appear within parentheses if the author's surname does not form part of a sentence. For example:

- i. (Abdul and Abidin, 2017b)
- ii. (Johan & Eli, 2016).

In any particular sentence, if several publications are cited, the references should be cited in chronological order. For example:

- i. Johan (2014) and Eli (2015) have both shown...
- ii. Abdul et al. (2010) and Abidin (2017) have obtained...

However, if several publications of the same year are cited the references should be cited in alphabetical order, with single author taking precedence over joint authors. For example:

- i. Abidin (2015), Abdul and Johan (2015) and Eli (2015) found that...

#### **4.2.2 Indirect Citation of Author's Name in Text**

The author's name and publication year should be placed at any relevant point in the sentence or at the end of the sentence in brackets if reference is made to any research finding of other work without mentioning the author in the text.

Example:

Open space result for measurement conducted in the mid-latitude region has shown minimum effect of ionosphere on the received satellite signal (Abidin et al., 2007).

### **4.2.3 No Authors**

For any reference from which the author is not available, it should be cited as:  
(Anonymous, 2016).

Example:

Placing the GPS receiver directly facing the sky will improve the received signal strength. (Anonymous, 2014).

### **4.2.4 Corporate Authors**

Reference made from any organization or bodies/agencies with no personal author should be written as: (MCMC, 2009).

Example:

Currently, MCMC (2012) is monitoring...

### **4.2.5 No Date**

If the publication year is not available, the abbreviation n.d should be used.

Example:

Directly: Abidin (n.d.) has performed measurement... Indirectly: Previous findings (Abidin, n.d.) has justified....

### **4.2.6 Secondary Referencing**

You may come across a summary of another author's work in the source you are reading, which you would like to make reference to in your document. This is called secondary referencing.

Example:

Direct reference: Recently, measurement performed in Fukuoka by Abidin (2006 cited in Bong, 2015) found that... Abidin (2006) as cited in Bong (2015) suggests that...

Indirect reference: (Abidin, 2006 cited in Bong, 2015)

#### **4.2.7 Websites**

For any material obtained from a website, the authorship of the website should be identified, either by author's surname or organization's name. URL or website address should not be written in the text. For example: Recent research on the ionospheric effect (Abba, 2015) has indicated...

### **4.3 Referencing**

All references should follow the latest version of the APA or Harvard. The references should be double-spaced with **Times New Roman** using **font size 12**. The following referencing style must be followed:

#### **4.3.1 Reference from Books**

Author's surname, Initials. (Year). *Title of book*, Edition., (only include this if not the first edition) Place of publication: (this must be a town or city, not a country) Publisher.

Examples:

Single author:

Conn, E. E. (1987). *Outlines of Biochemistry*, 5th ed., New York: John Wiley & Sons.

Two or more authors:

Kalpakjian, S., and Schmid, S. R. (2001). *Manufacturing Engineering and Technology*, 4th ed., New Jersey: Prentice-Hall.

#### **4.3.2 Chapters of Edited Books**

Chapter author(s) surname(s), Initials. (Year). Chapter followed by *In Title of book* (Book editor(s) initials and surnames, edition), page number, Place of publication: Publisher.

Example:

Horking, A. D. (1988). Moulds and Yeasts Associated with Foods of Reduced Water Activity: Ecological Interactions. In *Food Preservation by Moisture Control* (Seow, C. C., 2nd ed.), pp. 57-72. London: Elsevier Applied Science Publication.

#### **4.3.3 Books Which Have Been Translated**

Author. (Year). *Title of book*. Translated from (language). Place of publication: Publisher.

Example:

Yahya, R. (2005). *Hidraulik dan Pneumatik*. Translated from English. Johor, Malaysia: UTM Press.

#### 4.3.4 E-books

The required elements for e-books accessed from the University Library or other sources: Author, Initials. (Year). *Title of book*. [e-book] Place of publication: Publisher. Followed by “Available through:” include e-book source/database, web address or URL [Accessed date].

Example:

Fishman, R. (2005). *Ceramic Processing*. [e-book] Chester: Castle Press. Available through: Universiti Teknikal Malaysia Melaka Library <<http://library.utem.edu.my>> [Accessed on 14 September 2010].

#### 4.3.5 Reference from Journals and Newspapers

Author, Initials. (Year). Title of article. *Full title of journal, Volume number (Issue / Part number)*, Page numbers.

Example for journal article:

Kalotas, T. M., & Lee, A. R. (1990). A Simple Device to Illustrate Angular Momentum Conservation and Instability. *American Journal of Physics*, 58(6), 80 - 81.

Example for newspaper:

Kipper, D. (2008). Japan's New Dawn. *The Times*, 3 Sep, pp.10.

#### 4.3.6 Reference from Conference Proceedings

Author, Initials., Year. Full title of conference paper. In: followed by editor or name of organization, *Full title of conference*. Location, Date, Place of publication.

Example:

Hassan, M.D., & Norshimah, H., 1996. Designing of Primers for Cloning of Papaya Ringspot Virus Coat Protein Gene. In: Hasanah, M.G., Khatijah, M.Y., and Marziah, M. (Eds.), *Proceedings of the 8th National Biotechnology Seminar*, Selangor, Malaysia, 24 – 27 May 1996. UKM Publisher.

#### **4.3.7 Standards**

Corporate author. (Year). Identifying letters and numbers and full title of the standards. Place of publication: Publisher.

Example:

International Standards Office. (1998). *ISO 690 – 2 Information and documentation: Bibliographical references*. Geneva: ISO.

#### **4.3.8 Patent**

Inventor name, Initials., Assignee. (Year). Title. Place. Patent number (status, if an application).

Example:

Leonard, Y., Super Sports Limited. (2008). Tin Can Manufacture and Method of Sealing. Canada. Pat. 12, 789, 675.

#### **4.3.9 Multiple Works from the Same Author in the Same Year**

Example:

Reed, R. C. (2006a). *The Superalloys – Fundamentals and Applications*, Cambridge: Cambridge University Press.

Reed, R. C. (2006b). *Fusion Welding of Superalloys*, London: Macmillan.

#### **4.3.10 Anonymous (Authorless) Reference**

Depending on the type of document, replace the authorship with Anonymous.

Example:

Anonymous. (1996). External Trade in Sago Flour and Sago Starch, 1985-1995. *Agricultural Statistics, Sarawak*. Planning Division, Department of Agriculture, Sarawak, Malaysia.

#### **4.3.11 Publications of International Bodies/Agencies**

Depending on the type of source, replace the author's name with the organization name.

Example:

WHO. (1984). Environmental Health Criteria 39: Paraquat and Diquat. World Health Organization, Geneva.

#### **4.3.12 Websites**

Authorship or Source. (Year). *Title of web document or web page*. [type of medium] (date of update if available) Available at: include website address or URL [Accessed date].

Bowman. R. (2009). *Superalloys: A Primer and History*. [online] Available at:  
<http://www.tms.org/Meetings?Specialty/superalloy2000/SuperalloyHistory.html>  
[Assessed on 8 November 2010]

#### **4.4 Chapter Summary**

This chapter has provided guideline on how the literature citation and referencing should be written in the thesis. All postgraduate students are advised to consult the Centre for Graduate Studies for further clarification.

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Conclusion**

This thesis guideline has been prepared as guidance to all graduate students at UNIMAS in the preparation of their thesis for evaluation and final endorsement by the university Senate.

#### **5.2 Recommendations**

The availability of a writing tool that can easily assist all postgraduate students in preparing their final thesis will significantly reduce the time required to write thesis. CGS will continuously make effort in improving the quality of the thesis produced by students.

## REFERENCES

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## APPENDICES

### Journal Publications

1. **Adamu, S. A.**, Masri, T., Abidin, W.A.W .Z. & Ping, K. H. (2017) Review on gain and directivity enhancement techniques of Vivaldi antennas. *International Journal of Scientific & Engineering Research*, 8(3), 1919–1927.
2. **Adamu, S. A.**, Masri, T., Abidin, W. A. W. Z., Ping, K. H. & Babale, S. A. (2017). Corrugated antipodal Vivaldi antenna for radar applications. *The Institute of Electronics, Information and Communication Engineers*, 117(321), 111–116.
3. **Adamu, S. A.**, Masri, T., Zainal Abidin, W. A. W., Ping, K. H. & Babale, S. A. (2018). High-gain modified antipodal Vivaldi antenna for ultra-wideband applications. *Journal of Telecommunication, Electronic and Computer Engineering*, 10(1–12), 55–59.
4. **Adamu, S. A.**, Masri, T., Abidin, W. A. W. Z., Ping, K. H. & Su, H. T. (2018). Corrugated band-notched antipodal Vivaldi antenna using mushroom type EBG structure for wideband applications. *Journal of Advanced Research in Engineering Knowledge*, 5(1), 66–75.