The Student's Guide of Research Thesis Document for the FPT University Students (For IA specific purposes)

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I. Introduction

Writing a research thesis is a significant part of academic life. It serves as a comprehensive demonstration of your ability to conduct independent research, contribute to your field of study, and critically engage with existing knowledge. This guide provides a step-by-step approach to help you successfully navigate the research and writing process.

1. Getting Started with Your Research Thesis

1.1. What is a Research Thesis?

A research thesis is a substantial piece of academic work that presents your research findings, supported by a thorough analysis of relevant literature and data. It is a formal document that follows specific academic standards and demonstrates your ability to:

- Identify a research problem.
- Review and critique existing literature.
- Conduct independent research.
- Analyze and interpret data.
- Present findings clearly and logically.

1.2. Why is it Important?

A research thesis demonstrates your capacity to contribute original knowledge to your field, synthesize existing research, and develop expertise in your chosen topic. It also helps develop critical skills such as analytical thinking, problem-solving, time management, and academic writing.

2. Topic Selection and Research Planning

2.1. Choosing a Topic

Choosing a topic is one of the most critical decisions in the thesis-writing process. Your topic should:

- Interest you: Choose a subject you are passionate about, as it will motivate you throughout the research process.
- Be original: Focus on a unique angle or aspect that has not been extensively explored.
- Be researchable: Ensure there are enough resources and data available for your study.
- Align with your program: It should align with your field of study and the requirements of your academic program.

2.2. Formulating a Research Question

A well-defined research question provides focus and direction for your thesis. Consider the following:

- Is the question specific and clear?
- Is it manageable within your time frame?
- Does it address a gap in the literature or an unresolved problem?

2.3. Conducting a Literature Review

Before starting your research, conduct a thorough review of existing literature to:

- Identify key theories, models, and frameworks related to your topic.
- Understand the current state of research in your field.
- Discover gaps in the literature that your research can address.
- Avoid duplicating existing studies.

3. Developing the Thesis Proposal

3.1. Purpose of a Thesis Proposal

A thesis proposal outlines your research plan and allows your supervisor or committee to assess its feasibility. The proposal serves as a blueprint for your research, helping to ensure that your approach is organized and sound.

3.2. Components of a Thesis Proposal

- Introduction: A brief overview of your research topic, the

- background of the study, and its significance.
- Problem Statement/Research Question: Clearly state the research problem or question.
- Literature Review: Summarize existing research and identify gaps that your thesis will address.
- Research Methodology: Outline your research design, including data collection and analysis methods.
- Timeline: Provide an estimated schedule for each stage of the research.
- References: Include a list of sources you intend to use.

3.3. Getting Approval

Once the proposal is written, submit it to your advisor or committee for feedback. Revise as necessary based on their suggestions.

4. Research Methodology

4.1. Choosing a Research Method

Your research methodology depends on the nature of your study and your research question. The two most common approaches are:

- Qualitative research: Involves non-numerical data such as interviews, case studies, and observations. This method is ideal for exploring complex behaviors, opinions, or experiences.
- Quantitative research: Involves collecting numerical data and using statistical analysis. This method is suitable for testing hypotheses or analyzing patterns and relationships.

4.2. Data Collection

- Surveys/Questionnaires: Useful for gathering quantitative data from a large group.
- Interviews/Focus Groups: Effective for collecting in-depth qualitative data.
- Experiments: Ideal for testing hypotheses under controlled conditions.
- Archival Research: Involves analyzing existing data, documents, or records.

4.3. Data Analysis

Once data is collected, analyze it using appropriate methods:

- Qualitative Data: Use thematic analysis, coding, or discourse analysis to identify patterns and themes.
- Quantitative Data: Use statistical software such as SPSS, R, or Excel for analysis.

5. Writing the Thesis

5.1. Structure of the Research Thesis

The structure of a research thesis typically includes the following sections:

- **Title Page:** Includes the thesis title, your name, the date, and your institution.
- **Abstract:** A good abstract is a stand-alone summary of the paper, and should summarize the key components of the manuscript. Generally, the abstract should be concise and informative within 200-300 words. As an abstract is a separate section, it should be a self-containing text (no abbreviations, no references, no URLs, no undefined concepts, etc.). For research articles, abstracts should give a pertinent overview of the work. We strongly encourage authors to use the following style of structured abstracts, but without headings: (1) Background: Place the question addressed in a broad context (research background) and highlight the purpose of the study; (2) Methods: Describe briefly the main methods or treatments applied; (3) Results: Summarize the article's main findings; and (4) Conclusions: Indicate the main conclusions or interpretations.

  Keywords: All article types require 3-10 keywords.

- **Introduction:** A well-written introduction will provide your study with a context and prompt the readers to read the rest of your thesis. This section should briefly place the study in a broad context and highlight why it is important. It should define the purpose of the work and its significance. In this section, you should briefly highlight the main developments of their research topic and identify the main gaps that need to be addressed. In other words, this section should give an overview of your study. The section should be organized as:
  - What is known about the broad topic?

- What are the gaps or missing links that need to be addressed?
- What is the significance of addressing those gaps?
- The introduction should provide general information about the topic of your research and emphasize the main aims of the study. Please ensure that you only discuss the main and relevant aspects of the studies that have led to your aims. Do not elaborate on them as this should be done in the literature review section.

- **Literature review:** This section basically supports the background section by providing evidence for the proposed hypothesis. This section should be more comprehensive and thoroughly describe all the studies that you have mentioned in the background section. It should also elaborate on all studies that form evidence for the present study and discuss the current trends. To write this section, you will need to do a thorough literature search on different studies that relate to the broad topic of your research. This will introduce the readers to the area of your research. It would be ideal to organize them thematically and discuss them chronologically so that readers are aware of the evolution and progress in the field. In other words, separate themes should be discussed chronologically to highlight how research in those fields has progressed over time. This will highlight what has been done and what are the future directions that need to be worked upon.
- **Methodology:** The methodology section of a thesis outlines the research design, data collection methods, and analysis techniques used to address the research questions or hypotheses. It is a critical part of your thesis as it justifies the research approach and ensures that your findings are valid and reliable. Below is a guide on how to write the methodology section for a thesis.
- **Experimental and Results:** Provide a concise and precise description of the experimental results, their interpretation as well as the experimental conclusions that can be drawn. You should discuss the results and how they can be interpreted in perspective of previous studies and of the working hypotheses. The findings and

their implications should be discussed in the broadest context possible and limitations of the work highlighted

- **Discussion:** This section is one of the most critical components of a research thesis. It interprets and explains the significance of the research findings, placing them within the context of the existing literature, and addressing the research question or hypothesis (often using tables, graphs, or charts to display data).
- **Conclusion and Future Work:** The conclusions are a key component of the paper. It should complement the 'abstract' and is normally used by experts to value the paper's engineering content. A conclusion is not merely a summary of the main topics covered or a re-statement of your research problem, but a synthesis of key points and, if applicable, where you recommend new areas for future research.
- **References:** References should be numbered in the order they appear in the text (including table and figure captions) and listed separately at the end of the manuscript. We recommend that you prepare your references using a bibliographic software package, such as EndNote, to avoid typos and duplicate references, or use the built-in tool in Word (IEEE style).
- **Appendices** (if applicable): Contains supplementary material such as questionnaires, raw data, or additional graphs.

II. Reports of Research Thesis

- Report No.1: Introduction
- Report No.2: Literature Review
- Report No.3: Methodology
- Report No.4: Experimental and Results
- Report No.5: Discussion
- Report No.6: Conclusion and Future Work

III. Evaluation of the Research Thesis

Based on Group Mark (GM), Personal Mark (in range: from 100%GM to ± 20%GM) will be given for all Reports.

Project Mark = Process Mark (6 Reports) x 50% + Presentation Mark (by Committee) x 50%

Weights of Reports in Process Mark are:

- Report No.1: Introduction (10%)
- Report No.2: Literature Review (25%)
- Report No.3: Methodology (20%)
- Report No.4: Experimental and Results (25%)
- Report No.5: Discussion (15%)
- Report No.6: Conclusion and Future Work (5%)

IV. Capstone Project Regulation

FPT University's student has to follow regulations presented here during the time doing Capstone project (as usual, CP stands for Capstone Project).

1. Common Regulation

- All students of FPT University have to do CP in order to get bachelor certificate.
- Capstone project will be conducted in class form. Each class will be supervised by a teacher and divided into groups of 3 to 5 students.
- CP will be carried out in group. Each group includes 5 students (may be adjusted ± 1).
- The number of credit of CP is 10
- Duration to do and present final CP is throughout current term
- All CPs have to be presented by group facing with committee which is held by rector of FPT University
- Students have to be present at all meetings with their supervisor by pre-fixed schedule and other meetings conducted by group and supervisor.
- English is official language in all documents and CP presentation.

2. Conditions to Apply for CP

2.1. Requirements to apply CP:

- Must pass 80% of total credits (PHE_COM* and OJT excluded)

- Succeed on On-the-Job-Training (OJT).
- Must pass the following subjects:
  - IAP301 Policy Development in Information Assurance; or SPM401 Managing Security Project (if it is);
  - NWC302 Advanced Network elective (or NWC204);
  - One of four specialized courses in specified field (IAM302, FRS401(c), HOD401, DBS401).

3. Reports of CP

The Capstone Project Document that is composed of 6 parts called Reports:

- Report No.1: Introduction
- Report No.2: Literature Review
- Report No.3: Methodology
- Report No.4: Experimental and Results
- Report No.5: Discussion
- Report No.6: Conclusion and Future Work

4. Milestone Table of CP Implementation

- Fix group and topic of CP at the beginning of week 1
- At the beginning of week 3 submit: Report No.1 (duration: 2 week)
- At the beginning of week 4 submit: Report No.2 (duration: 3 week)
- At the beginning of week 7 submit: Report No.3 (duration: 2 weeks)
- At the beginning of week 9 submit: Report No.4 (duration: 3 weeks)
- At the beginning of week 12 show: All (development duration: 3 weeks) (continue to complete Reports No.1-3; weekly show results to the Mentors)
- At the beginning of week 13 submit: Report No.5 and Report No.6 (duration: 2 week) (Net Total Duration: 12 weeks)
- In week 14 complete the thesis (duration: 1 weeks)
- In week 15 represent Capstone Project

5. Conditions to Present Capstone Project

The Capstone Project should be performed strictly in accordance with FU Regulations and approved by the Mentor(s).

6. Evaluation of this Capstone Project

- Based on Group Mark (GM). Each group on every stage (with report) will be evaluated by its supervisor. This evaluation is called continuous assessment.
- Personal Mark (in range: from 100%GM to ± 20%GM) will also be given for all Reports or all continuous assessment.
- Final continuous assessment is collected from 6 reports with ratio as below:
  - Report No.1: Introduction -10%
  - Report No.2: Literature Review-25%
  - Report No.3: Methodology-20%
  - Report No.4: Experimental and Results-25%
  - Report No.5: Discussion-15%
  - Report No.6: Conclusion and Future Work-5%
- Presentation mark is given by each member of committee for each student on final project presentation. This personal mark is the average of all member of the Committee.
- Final Project Mark = Final continuous assessment (6 Reports) x 50% + Presentation Mark (by Committee) x 50%
- Scale of all marks is 10 (decimal place is 1)

V. Thesis Document Template

MINISTRY OF EDUCATION AND TRAINING

FPT UNIVERSITY

Capstone Project Document

Thesis Title….

Group Member	Student's name	Student' ID
Supervisor	Supervisor's Name	
Capstone Project code		

- Hanoi, Month/Year -

ABSTRACT

A good abstract is a stand-alone summary of the paper, and should summarize the key components of the manuscript. Generally, the abstract should be concise and informative within 200-300 words. As an abstract is a separate section, it should be a self-containing text (no abbreviations, no references, no URLs, no undefined concepts, etc.). For research articles, abstracts should give a pertinent overview of the work. We strongly encourage authors to use the following style of structured abstracts, but without headings: (1) Background: Place the question addressed in a broad context (research background) and highlight the purpose of the study; (2) Methods: Describe briefly the main methods or treatments applied; (3) Results: Summarize the article's main findings; and (4) Conclusions: Indicate the main conclusions or interpretations.

Keywords: All article types require 3-10 keywords.

ACKNOWLEDGEMENT

Optional section to thank those who helped you with your thesis.

TABLE OF CONTENTS

List all major sections and sub-sections with page numbers.

Tips for making automatic table of contents: https://support.microsoft.com/vi-vn/office/ch%C3%A8n-m%E1%BB%A5c-l%E1%BB%A5c-882e8564-0edb-435e-84b5-1d8552ccf0c0

LIST OF FIGURES

A list of all figures included in the thesis, with corresponding page numbers.

Illustration for list of figures:

Figure 1. The Layers of Information Security.

Tips for making table of fugures: https://blogdaytinhoc.com/tao-muc-luc-hinh-anh-trong-word-2010-2013-2016-22

LIST OF TABLES

A list of all tables included in the thesis, with corresponding page numbers.

Illustration for list of tables:

Type of Threat	Description	Impact
Hacking	Unauthorized access to systems or networks	Data theft, loss of confidentiality
Phishing	Fraudulent attempts to obtain sensitive information	Identity theft, financial loss
Malware	Malicious software designed to damage or disrupt systems	Data loss, system downtime
Insider Attacks	Security breaches from within the organization	Compromised data, reputational damage

Table 1: Types of Cyber Threats and Their Impact on Organizations.

Tips for making table of tables: https://mytour.vn/vi/blog/bai-viet/huong-dan-tao-muc-luc-bang-trong-word.html

ABBREVIATIONS

A list of abbreviations and acronyms used in the thesis, with their full forms.

Acronym	Meaning
AI	Artificial Intelligence
BA	Business Administration
CS	Computer Science
CF	Computing Fundamental
IA	Information Assurance
ITS	Information Technology Specialization
Math.	Mathematics
MC	Multimedia Communications
ML	Machine Learning

CHAPTER 1
INTRODUCTION

Provides background information, introduces the research problem, and outlines the purpose and significance of the study.

1.1. Background
1.2. Problem Statement
1.3. Research Objectives
1.4. Significance of the Study
1.5. Scope and Limitations
1.6. Thesis Structure

CHAPTER 2
LITERATURE REVIEW

Reviews relevant existing research and demonstrates how your thesis fits into the broader academic conversation.

2.1. Review of Previous Studies
2.2. Summary of the Literature Review
2.3. Contribution of Research

CHAPTER 3
METHODOLOGY

Describes the research design, data collection methods, and analysis techniques.

3.1. Research Design
3.2. Data Collection Methods
3.3. Sampling Data Analysis Techniques
3.4. Limitations of the Methodology

CHAPTER 4
EXPERIMENTAL AND RESULTS

Provide a concise and precise description of the experimental results, their interpretation as well as the experimental conclusions that can be drawn. You should discuss the results and how they can be interpreted in perspective of previous studies and of the working hypotheses.

4.1. Introduction
4.2. Presentation of Data
4.3. Analysis of Results
4.4. Interpretation of Results
4.5. Comparison with Literature
4.6. Implications of the Results

CHAPTER 5
DISCUSSION

The findings and their implications should be discussed in the broadest context possible and limitations of the work highlighted.

5.1. Restate the Research Problem or Objectives

5.2. Summarize Key Findings

CHAPTER 6
CONCLUSION AND FUTURE WORK

The 'conclusions' are a key component of the paper. It should complement the 'abstract' and is normally used by experts to value the paper's engineering content. A conclusion is not merely a summary of the main topics covered or a re-statement of your research problem, but a synthesis of key points and, if applicable, where you recommend new areas for future research.

6.1. Conclusion

6.2. Future Work

REFERENCES

References should be numbered in the order they appear in the text (including table and figure captions) and listed separately at the end of the manuscript. We recommend that you prepare your references using a bibliographic software package, such as EndNote, to avoid typos and duplicate references, or use the built-in tool in Word (IEEE style).

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APPENDICES (If any)

Any additional material such as raw data, questionnaires, etc., that support your thesis.