KIBU/SGS/MAN/005

KIBABII UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Manual for Research Proposal and Thesis Writing
Specific to the School of Computing and Informatics

July, 2025

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MANUAL FOR RESEARCH PROPOSAL AND THESIS WRITING

Approved by: Prof. Donald N. Siamba Management Representative	Sign:	Date: 11/8/2025
Authorized by: Prof. Isaac Ipara Odeo Vice-Chancellor	Sign:	Date: 12/08/2025

UNIVERSITY MANDATE

Philosophy

Kibabii University embodies the view that Science, Technology and Innovation are critical for sustainable utilization of material and human resources for the posterity of the universe.

Vision

To be a global and dynamic University of excellence in Science, Technology and Innovation

Mission

To achieve excellence in generation, transmission and enhancement of new knowledge in Science, Technology and Innovation through quality Teaching, Research, Training, Scholarship, Consultancy and Outreach Programmes.

Motto

Knowledge for Development

Core Values

i. Excellence
ii. Accountability and Transparency
iii. Integrity
iv. Social Responsibility
v. Innovation
vi. Academic Freedom

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CHAPTER ONE

INTRODUCTION

1.1   Background Information

This guide provides **comprehensive, discipline-specific instructions** to assist graduate students of the **School of Computing and Informatics (SCAI)** at **Kibabii University** (hereafter referred to as *the University*) in preparing proposals and theses in accordance with the University's academic and formatting standards.

It is designed to:

i.   Ensure **consistency** in academic writing and presentation.

ii.   Integrate **international best practices** in scholarly publishing.

iii.   Reflect **computing-specific requirements**, including research involving software systems, data models, frameworks, and architectures.

Students are advised to:

i.   Consult this guide at all stages of proposal/thesis preparation.

ii.   Seek clarification from SCAI faculty and the School of Graduate Studies (SGS) on any ambiguous or discipline-specific issues.

Stay updated on current editions of style manuals, ethical guidelines, and computing research standards.

1.2   Language

i.   The thesis shall be written in English using consistent spelling style throughout (American or British, not both).

ii.   The Roman alphabet shall be used unless the discipline specifically requires otherwise (e.g., mathematical notation, programming language syntax, symbolic logic).

iii.   All technical and computing-specific terminology should be used accurately, avoiding colloquial language.

iv.   Language should be precise, formal, and scholarly, with attention to readability and clarity.

1.3   Technical Specifications

The following specifications apply to all proposals and theses submitted. They ensure academic consistency, professional presentation, and compliance with the School of Graduate Studies (SGS) regulations.

1.4 Submission Quality

i.   Only the original word-processed or LaTeX-generated document, or clean, high-quality reproductions, will be accepted.

ii.   Documents must be free from correction fluid, overwriting, smudges, or poor-quality printing.

iii.   All pages must be clear, legible, and consistently formatted throughout the document.

1.5 Thesis and Proposal Title

i.   The title shall not exceed **20 words**.

ii.   It must clearly reflect the **methodology**, **application domain**, and **technical focus**.

iii.   Avoid unnecessary jargon or unexplained abbreviations in the title.

1.6 Page Limits

i.   **Master's Proposal**: Maximum **25 pages**.

ii.   **Doctoral Proposal**: Maximum **30 pages**.

iii.   Where detailed technical appendices are necessary (e.g., algorithms, sample code, extended diagrams), these should be placed in the appendices to preserve main document conciseness.

1.7 Page Layout and Margins

a.   Paper size: **A4 (210 mm × 297 mm)**, 80gsm white bond paper or equivalent.

b.   Margins:

    i.   Left: **40 mm**

    ii.   Right: **25 mm**

    iii.   Top: **25 mm**

    iv.   Bottom: **25 mm**

c.   Orientation: **Portrait** for main text. Landscape orientation may be used for oversized tables or figures, ensuring page numbering remains consistent.

1.8 Typeface and Font Size

i.   **Main text**: Times New Roman, 12-point.

ii.   **Diagrams, tables, and figures**: Arial or Calibri may be used if it improves clarity.

iii.   **Footnotes and table text**: Minimum 8-point font size.

iv.   **Italics**: For scientific names, foreign terms, and sparing emphasis.

v. Decorative or script fonts are **not permitted**.

1.9 Line Spacing

a. **Thesis**: Double-spaced main text.

b. **Proposal**: 1.5 spacing for main text.

c. **Single spacing** is required for:

    i. Abstract

    ii. Footnotes

    iii. Block quotations (three or more lines)

    iv. References (except between entries)

    v. Captions and headings

    vi. Appendices (e.g., questionnaires, letters)

1.10 Heading Styles and Numbering

Use a maximum of three heading levels, consistently numbered throughout the document (e.g., 2.1.3).

Level	Example	Alignment	Style
Chapter Title	CHAPTER TWO LITERATURE REVIEW	Centre	ALL CAPS, Bold, 14 pt
First-Level Section	2.2 Theoretical Framework	Left	Title Case, Bold, 12 pt
Second-Level Section	2.2.1 Overview of Relevant Theories	Left	Title Case, Bold, 12 pt
Third-Level Section	2.2.1.1 Theory A	Left	Title Case, Italics, 12 pt

1.11 Figures, Tables, and Plates

a. All visuals must fit within the specified margins.

b. Number sequentially within each chapter (e.g., Figure 3.2, Table 4.1).

c. **Captions**:

    i. Figures and plates: Caption below the visual.

    ii. Tables: Title above the table.

d. **Definition**: "Plates" refers to photographic or illustrative materials, including high-resolution rendered diagrams.

e. All visuals must be cited and discussed in the main text.

1.12 References

a. **APA Style**: For Information Technology (IT) and Information Systems (IS).

b. **IEEE Style**: For Computer Science (CS) and Computer Technology (CT).

c. **Interdisciplinary Projects**: Consult with the Department to select a single style to be applied consistently throughout.

d. All references must be:

    i. Accurate and complete.

    ii. Consistent between in-text citations and the reference list.

    iii. Compliant with the latest edition of the selected style manual.

1.13 Appendices

At a minimum, appendices must include:

a. **Monetary budget** – Detailed cost estimates.

b. **Time schedule** – Gantt chart or equivalent.

c. **List of tools** – Software, hardware, libraries, datasets, and other resources. Additional technical materials (e.g., algorithms, code snippets, supplementary results) should also be placed here.

1.14 Binding

a. **Proposals**: Spiral-bound, following SGS specifications.

b. **Theses**: Hardbound in university-approved colours, with spine details as follows:

    i. Candidate's surname and initials (starting 4 cm from the top).

    ii. Degree name centred on the spine.

    iii. Year of submission 5 mm from the bottom edge.

1.15 Seminars

a. **Master's**: At least one seminar plus the proposal defence.

b. **Doctoral**: At least two seminars plus the proposal defence.

c. Candidates are encouraged to present at peer-reviewed conferences during their candidature.

1.16 Publishing Requirements

a. **Master's**: At least one paper in a refereed journal based on the research before the thesis oral examination.

b. **Doctoral**: At least two papers in refereed journals before the thesis oral examination.

c. Ethical authorship rules apply — supervisors must be acknowledged where applicable.

CHAPTER TWO

PROPOSAL FORMAT

2.1 Introduction

This chapter outlines the **required structure, formatting, and content** for research proposals submitted by graduate students in the **School of Computing and Informatics (SCAI)** at **Kibabii University**.

The aim is to ensure proposals meet **institutional standards**, reflect **international best practices**, and are tailored to **computing-related research**, which may involve **software development, model/framework design, algorithm evaluation, data analytics, and emerging technologies**.

Students should note:

i. Proposals must follow **this format** unless prior written approval for deviations is obtained from both the Department and the **School of Graduate Studies (SGS)**.

ii. The proposal should **demonstrate technical depth**, **feasibility**, and **alignment with current research trends** in computing.

2.2 Proposal Structure, Formatting, and Content Guidelines

2.2.1 Style Guidelines

Style refers to the **form, presentation, and organization** of the proposal, ensuring **consistency, precision, and clarity**.

A complete proposal has **three main parts**:

i. **Preliminary Pages** – Includes title page, declaration, table of contents, and lists of tables/figures/abbreviations.

ii. **Main Body** – Divided into chapters and sections, covering the research problem, literature, and methodology.

iii. **Supporting Pages** – References and appendices.

2.2.2 Title Page

The title page must strictly follow **Appendix I format** and include:

a. **Title**:

i. Written in **UPPERCASE**.

ii. Should not exceed **20 words**.

iii. Must clearly indicate the **research domain**, **technical approach**, and **application area**.

iv. Avoid abbreviations unless they are standard in the field.

b. **Candidate's Full Name**:

i. Written in **bold lowercase letters**, cantered below the title.

c. **Institutional Statement**:

A Research Proposal Submitted to the Graduate School in Partial Fulfilment of the Requirements for the Degree of [Insert Degree Title] of Kibabii University

d. **Date of Submission**:

i. Month and year only (e.g., **October 2025**).

2.2.3 Declaration Page

This section confirms the originality of the work and the approval of the supervisors. It must include:

a. **Candidate's Declaration**

"This research proposal is my original work, prepared with no other than the indicated sources and support, and has not been presented elsewhere for a degree or any other award."

i. **Signed** and dated by the candidate.

b. **Supervisor Certification**

This research proposal has been submitted with our approval as University Supervisor(s).

Signed and dated by **all supervisors** with their official titles and departmental affiliations.

2.2.4 Abstract

The abstract is a **concise, standalone summary** of the proposal, written in **150–300 words** and presented **single-spaced** on a new page immediately after the declaration. It should consist of **no more than two paragraphs** and omit keywords.

The abstract must follow a **logical sequence** that answers the questions below while ensuring **technical depth** appropriate for doctoral-level computing research.

Structure & Required Content

a. **Background**

i. Introduce the broad **computing challenge** or domain context.

ii. Indicate **how the proposal addresses a specific gap** in knowledge or practice.

b. **Aim/Purpose**

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i. State the **overarching goal** of the study.

ii. Highlight **why the problem is worth solving now** (industry/academic relevance).

c. **Objectives**

i. Present **clear, measurable, and achievable objectives** aligned with SMART criteria.

d. **Methodology**

i. Specify **research design** (e.g., simulation, experimental, mixed methods).

ii. Mention **datasets, algorithms, tools, or platforms**.

iii. If applicable, indicate **sample characteristics** (e.g., for user testing or case studies).

e. **Contribution**

i. State **theoretical** (e.g., new cryptographic model), **methodological** (e.g., hybrid evaluation approach), and **practical** contributions (e.g., deployable secure IoT protocol).

f. **Implications for Practitioners**

i. Explain how the findings can improve **industry practices, standards, or system design**.

g. **Implications for Researchers**

i. Indicate **new research avenues**, datasets, or tools for the academic community.

h. **Impact on Society**

i. Summarize **wider societal benefits** — security, economic, policy implications.

i. **Assessment & Quality Criteria**

i. Clarity & Coherence – Each section flows logically; avoids jargon where possible while retaining technical precision.

ii. Relevance – Directly aligned with computing research priorities.

iii. Completeness – All required elements (background → societal impact) addressed.

iv. Technical Depth – Mentions computing methods, tools, metrics.

v. Conciseness – Within word and paragraph limits; no redundant sentences.

vi. Alignment – Accurately reflects the proposal's content and objectives.

vii. Originality – Highlights novelty clearly without overclaiming.

2.2.5 Table of contents

The **Table of Contents (ToC)** should appear **immediately after the abstract** and must begin on a new page.

Purpose:

  i.   To give the reader a **clear overview** of the structure and organization of the proposal.

 ii.   To allow quick navigation to specific sections.

Requirements:

  a.   The ToC must list:

  i.   **Preliminary pages** (abstract, dedication, acknowledgements, lists of tables, figures, acronyms).

 ii.   **Main chapters** and their major sections.

 iii. **References** and appendices.

  b.   **Formatting**:

  i.   Follow the SGS-approved layout for indentation, numbering, and alignment.

 ii.   Use **chapter titles** that are concise and **do not exceed one line** in length.

 iii. Ensure page numbers are **right-aligned** using leader dots (....).

  c.   **Computing-specific note**:

  i.   Include listings for **algorithm catalogues, software tools used, code repositories**, or **framework diagrams** where applicable, either under appendices or as dedicated sections.

2.2.6   List of Appendices

The **List of Appendices** should be placed **immediately after the Table of Contents** on a new page.

Purpose: To provide quick reference to **supporting documents** that are not included in the main body of the proposal but are essential for completeness.

Requirements:

a.   List appendices **sequentially** (Appendix A, Appendix B, etc.).

b.   Include **descriptive titles** (e.g., *Appendix A: Gantt Chart of Project Timeline*).

c.   Common computing research appendices include:

  i.   Source code listings.

 ii.   Dataset descriptions.

 iii. Technical specifications of software/hardware.

 iv.   Ethics approval forms.

  v.   Budget breakdowns.

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2.2.7 List of Tables

The **List of Tables** should appear **after the List of Appendices**, beginning on a new page.

Requirements:

i. Present the **exact titles** of tables as they appear in the text.

ii. Ensure the page numbers are correct and formatted consistently.

iii. Tables must be **numbered sequentially** and **chapter-linked** (e.g., Table 3.2 means the second table in Chapter 3).

iv. Titles should be **descriptive yet concise** (max. one line where possible).

Computing-specific examples of table entries:

i. Table 2.1: Comparison of Machine Learning Models for Anomaly Detection

ii. Table 4.3: Performance Metrics for Proposed Encryption Algorithm

2.2.8 List of Figures

The **List of Figures** should be placed **immediately after the List of Tables** on a new page.

Definition:
Figures include **graphs, charts, maps, architectural diagrams, UML diagrams, network topologies, flowcharts, wireframes, screenshots, and other visual representations** that are not tables.

Requirements:

i. Follow the **exact title** as it appears in the text.

ii. Maintain **chapter-linked numbering** (e.g., Figure 5.4 is the fourth figure in Chapter 5).

iii. Page **numbers** should be **right-aligned with leader dots**.

2.2.9 List of Abbreviations and Acronyms

This section should follow the **List of Figures** on a separate page.

Purpose: To ensure readers can easily understand technical terms, especially in computing research where acronyms are frequent.

Requirements:

i. List entries **alphabetically**.

ii. Write the **abbreviation first**, followed by the full term.

iii. Include **field-specific terms** (e.g., HCI, IoT, NLP, CNN).

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2.2.10 Chapter Formatting

i.   Each chapter must **start on a new page**.

ii. Main chapter titles must be **cantered, bold, and in uppercase**.

Section and Subsection Rules:

i.   **First-level headings** (e.g., 2.1, 2.2) are **bold and left-aligned**.

ii. **Second-level headings** (e.g., 2.1.1) are **italicized and left-aligned**.

iii. **Third-level headings** (e.g., 2.1.1.1) use sentence case and may be italicized if necessary.

Text Flow Rules:

i.   A subsection heading must **not** appear at the bottom of a page unless there are at least **two lines of text** following it.

ii. Avoid **partially filled pages** except at the end of a chapter or when space constraints occur around tables or figures.

Computing-specific note:

i.   If the proposal includes **program architecture diagrams, framework schematics, or pseudocode listings**, these should follow the same numbering and captioning rules as tables and figures.

2.3 Chapters and Major Sections

2.3.1 Chapter One: Introduction

Chapter One is the **gateway to your research** — it frames the context, defines the problem, establishes objectives, and sets boundaries for the study. Since the chapter is inherently the introduction, **do not include a separate "Introduction" heading**.

A well-constructed Chapter One ensures that **any reader, examiner, or practitioner** can quickly grasp:

i.   *What* you are researching.

ii. *Why* it matters (academically, technically, and societally).

iii. *How* you plan to achieve it.

2.3.1.1 Background to the study

Purpose & Content

a.   Present a **broad, evidence-based overview** of your research domain within computing.

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b. Discuss **historical developments** leading to the current state of the art.

c. Identify **current trends, challenges, and opportunities** relevant to your research.

d. Progressively narrow the scope until you arrive at the **specific problem area** you are investigating.

Computing-Specific Considerations

a. Include key technical definitions and domain-specific terminology.

b. Reference major technological shifts (e.g., the transition from monolithic to microservices architecture).

c. Highlight research frontiers e.g. AI: limitations of current LLMs in reasoning under uncertainty; Cybersecurity: inadequacy of signature-based intrusion detection for zero-day threats; Data Science: scalability challenges in processing multi-terabyte datasets.

d. Use figures or diagrams to illustrate ecosystem architecture, process flow, or historical evolution.

Quality Criteria

i. Demonstrates *comprehensive domain mastery*.

ii. Supported by **recent, high-impact, peer-reviewed literature**.

iii. Balanced treatment of theory, practice, and application.

iv. Smooth funnel from broad domain context to specific research niche.

2.3.1.2 Statement of the Problem

Purpose & Content

i. Present a **precise, unambiguous articulation** of the research gap.

ii. Explain **what is wrong, missing, or suboptimal** in the current state of knowledge or technology.

iii. Show **evidence** that the problem exists and is significant.

Computing-Specific Considerations

a. Formalize the problem using:

i. Mathematical expressions.

ii. Algorithmic complexity classification.

iii. Security threat models.

iv.   System performance metrics.

b.   Compare benchmarks or performance baselines from literature to highlight the gap.

c.   Provide **real-world failure cases** where current solutions fall short.

Quality Criteria

a.   Gap is **clearly derived from the literature**.

b.   Problem statement is **specific, researchable, and non-trivial**.

c.   Contains **quantitative and/or qualitative evidence**.

d.   Avoids conflating symptoms with root causes.

2.3.1.3   Purpose of the Study

Purpose & Content

a.   Express the **overarching aim** of your research in 1–3 sentences.

b.   Directly connect the purpose to the identified problem.

Computing-Specific Considerations

a.   Clearly indicate the type of contribution expected:

   i.   Algorithm development.

  ii.   System architecture design.

 iii.   Evaluation framework creation.

b.   Reflect whether **the purpose is exploratory, explanatory, or solution-oriented**.

Quality Criteria

a.   Purpose flows logically from problem statement.

b.   Uses **precise and technical language**.

2.3.1.4   Objectives of the Study

Purpose & Content

a.   **General Objective** – Broad statement of what you aim to achieve.

b.   **Specific Objectives** – Clearly defined, measurable targets.

Computing-Specific Considerations

a.   Align each objective with a deliverable:

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    i.   Objective → Develop model → Deliverable → Prototype or software.

b. Map objectives to **research phases** (design, implementation, validation, dissemination).

Quality Criteria

a. Objectives are **SMART** (Specific, Measurable, Achievable, Relevant, Time-bound).

b. Realistic within a **3–5-year doctoral timeframe**.

2.3.1.5   Research Questions or Hypotheses (Choose one approach)

Purpose & Content

a. **Research Questions** – Exploratory, guiding lines of inquiry.

b. **Hypotheses** – Testable predictions suitable for empirical/experimental work.

Computing-Specific Considerations

a. If using hypotheses, define:

    i.   Null hypothesis (H_0).

   ii.   Alternative hypothesis (H_1).

b. Ensure variables are measurable (e.g., accuracy, precision, throughput).

Quality Criteria

a. Alignment with objectives and methodology.

b. No mixing of questions and hypotheses in the same study.

2.3.1.6   Justification of the Study

Purpose & Content

a. Explain **why this research is important now**.

b. Link to **academic, industrial, and societal relevance**.

Computing-Specific Considerations

a. Address:

    i.   Urgency (e.g., rapid evolution of cyber threats).

   ii.   Market demand (e.g., industry need for scalable cloud solutions).

   iii.   Policy alignment (e.g., national digital transformation strategies).

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Quality Criteria

a. Justification is **evidence-based**, not opinion-based.

b. Relevance clearly articulated for multiple stakeholders.

2.3.1.7 Significance of the Study

Purpose & Content: State **who benefits** from the research and *how*.

Computing-Specific Considerations: Separate **theoretical** significance (new algorithms, frameworks) from **practical** significance (tools, prototypes, systems ready for deployment).

Quality Criteria

a. Avoids generic claims; specifies concrete value.

2.3.1.8 Scope of the Study

Purpose & Content

a. Define boundaries in terms of:

   i.   Technical scope.

   ii.   Geographical/industry focus.

   iii.   Dataset and performance constraints.

Computing-Specific Considerations

a. Explicitly state:

   i.   Platforms and languages used.

   ii.   Data sources and volume.

   iii.   Hardware constraints.

Quality Criteria

   i.   Scope is **manageable and aligned with available resources**.

2.3.1.9 Assumptions

Purpose & Content

   i.   List **assumed conditions** necessary for the study.

Computing-Specific Considerations

a. Examples:

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i.   Availability of computational resources.

ii.   Stability of APIs during development.

Quality Criteria

i.   Assumptions are **reasonable and defendable**.

2.3.1.10 Limitations

Purpose & Content

a. Acknowledge **constraints** that may impact results.

Computing-Specific Considerations

a. Examples:

i.   Limited access to proprietary datasets.

ii.   Model performance trade-offs due to hardware constraints.

Quality Criteria

a. Limitations acknowledged without undermining research credibility.

b. Where possible, mitigation strategies are outlined.

2.3.1.11 Overall Assessment Checklist (Adapted from Thesis Assessment Prompts)

a. Each section presents in the prescribed order.

b. Logical progression from broad domain → specific gap → objectives.

c. Strong alignment between problem, objectives, and methodology.

d. Supported with **current, high-quality references**.

e. Clear articulation of boundaries, assumptions, and limitations.

2.3.2   Chapter Two: Literature Review

Chapter Two critically analyses existing research and practice to position your study within the academic and professional discourse.

It should:

i.   Be **organized around the study's specific objectives** (or logical thematic groupings derived from them).

ii.   Clearly **identify and justify the research gap** your work will address.

iii.   Present a **conceptual and/or theoretical framework** that guides the study.

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iv.   Start with a **clear introduction** and end with a **synthesized chapter summary**.

2.3.2.1   Introduction to the Chapter
Purpose & Content

The introduction sets the reader's expectations and explains **how the literature review is structured**. It should:

i.   State **the purpose of the literature review** (e.g., to evaluate current methods, identify gaps, justify the framework).

ii.   Briefly link the review to the **problem statement and objectives** from Chapter One.

iii.   Outline **how the review is organized** — whether strictly by each research objective, or by themes that address multiple objectives.

Computing-Specific Considerations

i.   Identify **databases and digital libraries** to be searched: IEEE Xplore, ACM Digital Library, SpringerLink, ScienceDirect, Scopus, Web of Science.

ii.   Specify **search strategies**: Keywords and Boolean operators (e.g., *("federated learning" AND "privacy") OR ("edge computing" AND "security")*).

iii.   Define **inclusion and exclusion criteria**:

    a.   Inclusion: peer-reviewed articles, conference proceedings, technical reports, patents (if relevant).

    b.   Exclusion: non-credible sources, outdated works unless seminal.

iv.   Indicate the **review time frame** (e.g., "This review covers literature from 2015–2024, with earlier works included for theoretical context").

Quality Criteria

i.   Clear roadmap of chapter structure.

ii.   Transparent search methodology for reproducibility.

iii.   Justifies choice of review organization method.

2.3.2.2   Literature Review Organized by Research Objective
Purpose & Content

i.   Structure each major subsection to align with a single research objective.

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ii.   Within each subsection:

    a.   Present the theoretical foundation for the objective.

    b.   Summarize current state-of-the-art approaches or solutions.

    c.   Critically evaluate methodologies, findings, and limitations.

    d.   Identify **specific, evidence-based gaps** that your research addresses.

Computing-Specific Considerations

i.   For **AI research**: compare models (e.g., CNN, RNN, transformers), datasets, training regimes, and performance metrics.

ii.   For **cybersecurity**: evaluate cryptographic protocols, intrusion detection systems, security frameworks.

iii.   For **software engineering**: review software design patterns, testing methodologies, DevOps toolchains.

iv.   For **data science**: compare big data processing frameworks (e.g., Apache Spark vs. Flink), statistical vs. ML approaches.

v.   Use **comparative summary tables** that list:

    a.   Authors & year.

    b.   Method/approach.

    c.   Dataset or experimental environment.

    d.   Performance results.

    e.   Reported limitations.

vi.   For each work, connect its relevance directly to the **specific objective** being addressed.

Quality Criteria

i.   Analysis is **critical, not descriptive** (explains *why* certain methods succeed or fail, not just what was done).

ii.   Sources are **up-to-date, credible, and high-impact**.

iii.   Gaps are **derived logically** from synthesis, not assumed.

iv.   Consistent and precise technical terminology.

2.3.2.3 Thematic Synthesis & Gap Identification

Purpose & Content

i. Summarize findings across all reviewed works and clearly state **what is missing** or **what has not been addressed adequately**.

ii. The gap should be:

    a. Explicitly **connected to the research problem** in Chapter One.

    b. Clearly **justified as worth investigating**.

iii. Explain why existing solutions fail to fully address the problem in your **specific context**.

Computing-Specific Considerations

i. Quantify the gap where possible:

ii. Example: *"Current blockchain-based IoT frameworks maintain high security but introduce transaction latencies exceeding 200ms, which is unsuitable for real-time sensor networks."*

iii. Visualize the gap:

    iii.1.1. Use coverage diagrams showing addressed vs. unaddressed problem space.

    iii.1.2. Show performance comparison charts highlighting where existing methods fall short.

Doctoral-Level Quality Criteria

i. Gap is **specific, measurable, and significant**.

ii. Supported by **multiple independent sources**.

iii. Directly informs the research objectives and methodology.

2.3.2.4 Conceptual / Theoretical Framework

Purpose & Content

i. **Conceptual Framework**:

    i.1. A diagram + explanation that shows relationships between variables, constructs, and concepts relevant to your study.

    i.2. Synthesized from reviewed literature (not copied from one source).

    i.3. **Serves** as a **blueprint** for methodology and analysis.

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ii. **Theoretical Framework**:

    ii.1. Based on a recognized theory or model in computing or an allied field.

    ii.2. Guides how you interpret and analyze findings.

    ii.3. Must be extended, supported, or contradicted by your results — not just cited and forgotten.

Important Distinction

i. **Theories guiding the study** = background principles that shape the research direction.

ii. **Theoretical framework** = the specific theory/model you are actively testing, adapting, or applying.

Computing-Specific Considerations

i. **AI:** computational learning theory, probabilistic graphical models, explainable AI frameworks.

ii. **Cybersecurity:** threat modeling frameworks, zero-trust architectures, Kerckhoff's principle.

iii. **Networking:** queuing theory, network flow models.

iv. **HCI:** activity theory, cognitive load theory.

    iv.1. Ensure all diagrams are:

    iv.2. Properly labeled.

    iv.3. Logically consistent.

v. Directly connected to methodology.

Doctoral-Level Quality Criteria

i. Framework integrates **concepts, variables, and relationships** into a coherent model.

ii. Framework is revisited in results/discussion to show theoretical contribution.

iii. Relationship between framework and objectives/methods is **explicit**.

2.3.2.5 Chapter Summary

Purpose & Content

i. Recap the main themes, findings, and identified gaps.

ii. Restate **how the gap justifies the research**.

iii. Provide a transition to **Chapter Three (Methodology)**.

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Computing-Specific Considerations

    i.   Mention **technical challenges** that will be addressed in the methodology.

    ii.   Tie the conceptual/theoretical framework to planned research design.

Doctoral-Level Quality Criteria

    i.   Summary synthesizes, not just repeats.

    ii.   Creates a logical bridge to methodology.

2.3.2.6 Assessment Checklist

a. Chapter begins with an introduction and ends with a summary.

b. Subsections align with each specific research objective.

c. Review is critical, analytical, and comparative — not a simple list.

d. Sources are relevant, credible, and current.

e. Gaps are explicit and logically derived.

f. Conceptual/theoretical framework is:

    i.   Original in application.

    ii.   Clearly explained and visualized.

    iii.   Integrated into methodology and analysis.

g. Visual aids (tables, charts, diagrams) enhance clarity.

h. **Citation style** is consistent and discipline-appropriate (IEEE/ACM/APA).

2.3.3 Chapter Three: Research Methodology

The chapter should be organized in such a way that the subsections handle matters dealing with each objective of the study. The arguments should be presented in a manner that clearly identifies the gap that the study seeks to fill. The Conceptual / theoretical framework should be provided in this chapter. When the theoretical framework is used, at the end of the study, it should have been extended / supported or contradicted. Theoretical framework should not be confused with theories guiding the study. The chapter must start by being introduced and end by chapter summary.

This chapter explains **how** the research will be executed so that another scholar could **replicate or audit** the study with the same parameters and obtain comparable results.

It must demonstrate:

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i.   **Philosophical alignment with the research problem.**

ii. **Methodological rigor appropriate for doctoral-level computing research.**

iii. **Technical feasibility within time, budget, and resource constraints.**

iv. **Ethical and quality assurance provisions** to maintain credibility.

The chapter **begins** with a clear **Introduction** and **ends** with a concise but powerful **Chapter Summary** linking methodology to objectives.

Proposal – Minimum Required Sections

2.3.3.1   Introduction to the Chapter

Purpose & Content

a. **Orient the reader:** describe the purpose of this chapter and how it is organized.

b. **Explicitly connect methodology to:**

i.   The problem statement in Chapter One.

ii. The gaps identified in Chapter Two.

iii. The conceptual/theoretical framework.

c. **State the guiding methodological philosophy**.

Computing-Specific Considerations

a. **Indicate whether the study is:**

i.   Experimental (e.g., benchmarking ML algorithms).

ii. Simulation-based (e.g., using NS-3 to model networks).

iii. Design science (e.g., developing a novel block chain protocol).

iv. Mixed methods (e.g., algorithm evaluation + expert interviews).

b. **Include any software environments** (e.g., MATLAB, Python, R, Tensor Flow, CUDA).

Doctoral-Level Quality Criteria

i.   Clearly aligns methodology to research aims.

ii. Reads as a **roadmap** for the chapter.

iii. Avoids generic statements; gives **discipline-specific detail**.

2.3.3.2   Research Philosophy

Purpose & Content

a. **State the research paradigm:**

   i.   **Positivism –** quantitative, hypothesis-driven.

   ii.   **Interpretivism –** qualitative, contextual understanding.

   iii.   **Pragmatism –** combination for practical problem-solving.

   iv.   **Design Science –** artefact creation + rigorous evaluation.

b. **Justify why this philosophy** is best for the study.

Computing-Specific Considerations

   i.   AI model benchmarking → Positivist.

   ii.   Security threat analysis with human factors → Mixed (Pragmatist).

   iii.   Designing a distributed ledger protocol → Design Science.

Doctoral-Level Quality Criteria

   i.   Philosophy logically supports chosen methods.

   ii.   Shows awareness of alternative paradigms and reasons for exclusion.

   iii.   Linked to both **data collection** and **analysis** plans.

2.3.3.3 Research Methodology

Purpose & Content

   a.   **Define the overall approach (quantitative, qualitative, mixed, design science).**

   b.   **Map methodology to each research objective.**

   c.   **Describe if methodology is:**

     i.   **Empirical – experiment-driven.**

     ii.   **Theoretical – model-driven.**

     iii.   **Applied** – implementation-focused.

Computing-Specific Considerations

   i.   Quantitative: algorithm performance tests, statistical hypothesis testing.

   ii.   Qualitative: expert interviews on security policy adoption.

   iii.   Mixed: prototype performance tests + user experience surveys.

Doctoral-Level Quality Criteria

   i.   Explicit justification for methodology selection.

ii. Feasibility proven via preliminary studies or references.

2.3.3.4 Research Strategy

Purpose & Content

a. **Specify how the methodology is implemented:**

   i. **Experimental design (lab/field).**

   ii. **Simulation modeling.**

   iii. **Case study research.**

   iv. **Action research cycles.**

   v. **Surveys or observational studies.**

b. **Detail timelines, stages,** and dependencies.

Computing-Specific Considerations

   i. Simulation: define simulation parameters, network topologies, traffic patterns.

   ii. Experimental: specify hardware, OS, software stack, testing tools.

   iii. Case study: describe organizational or system context.

Doctoral-Level Quality Criteria

   i. Strategy replicable by others.

   ii. Anticipates and accounts for confounding factors.

2.3.3.5 Population

Purpose & Content

   i. Define the total **group/system/data universe** relevant to the study.

   ii. For human subjects, define demographics.

   iii. For computing systems, define the environment or dataset scope.

Computing-Specific Considerations

   i. AI: dataset sources and coverage.

   ii. Networking: number of nodes, topology type.

   iii. HCI: participant skill level, device types.

Doctoral-Level Quality Criteria

   i. Population definition precise and consistent with objectives.

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ii.   No ambiguity in inclusion/exclusion criteria.

2.3.3.6   Sampling Technique

Purpose & Content

i.   Specify sampling method:

    i.1. Probability (random, stratified).

    i.2. Non-probability (purposive, convenience).

ii.   Justify sample size with:

    ii.1. Power analysis (quantitative).

    ii.2. Saturation point (qualitative).

Computing-Specific Considerations

i.   Dataset subsetting for AI training/test splits.

ii.   Selecting security log data from specific time windows.

Doctoral-Level Quality Criteria

i.   Sampling method minimizes bias.

ii.   Sample size justified statistically or theoretically.

2.3.3.7   Data Collection Tools & Procedures

Purpose & Content

i.   List all tools and instruments.

ii.   Detail **how** and **when** they will be used.

Computing-Specific Considerations

i.   Tools: Wireshark, JMeter, TensorFlow, GitLab CI/CD logs.

ii.   Automated scripts for reproducible testing.

iii.   Version control to ensure integrity of source code and configurations.

Doctoral-Level Quality Criteria

i.   Tools validated or industry-standard.

ii.   Procedures step-by-step and reproducible.

2.3.3.8   Data Analysis Plan

Purpose & Content

i. Describe analytical frameworks and statistical/algorithmic techniques.

ii. Link methods to each research question.

Computing-Specific Considerations

i. AI: precision, recall, F1-score, ROC-AUC.

ii. Cybersecurity: false positive/negative rates, mean time to detect.

iii. Software engineering: defect density, maintainability index.

iv. Networking: throughput, latency, jitter.

Doctoral-Level Quality Criteria

i. Analysis methods appropriate and justified.

ii. Software versions specified.

2.3.3.9 Data Management and Reproducibility Standards
To support transparency and reproducibility in computing research:

i. **Data Storage** – Store raw and processed data securely (encrypted if sensitive).

ii. **Backups** – Maintain at least two backup copies (local and cloud).

iii. **Metadata** – Provide sufficient documentation to allow reanalysis.

iv. **FAIR Principles** – Make data Findable, Accessible, Interoperable, and Reusable where possible.

v. **Code Sharing** – Deposit code in reputable repositories (e.g., GitHub, GitLab) with licensing information.

2.3.3.10 Quality Assurance – Reliability & Validity

Purpose & Content

i. Explain measures to ensure data collection/analysis is:

   i.1. Reliable (repeatable).

   i.2. Valid (accurately measures intended outcomes).

Computing-Specific Considerations

i. Running multiple trials to confirm consistency.

ii. Cross-validation in AI models.

iii. Comparing simulation results with real-world benchmarks.

Doctoral-Level Quality Criteria

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i.   QA plan explicit, measurable, and defensible.

2.3.3.11 Ethical Considerations

Purpose & Content

i.   Demonstrate compliance with:

    i.1. Institutional Review Board (IRB).

    i.2. Legal regulations (GDPR, HIPAA).

    i.3. Research integrity standards.

Computing-Specific Considerations

i.   Protecting participant data in usability studies.

ii.   Ethical hacking limitations for penetration testing.

iii.   Bias detection/mitigation in AI datasets.

Doctoral-Level Quality Criteria

i.   Ethics approval references included.

ii.   Risks to participants/systems minimized and mitigated.

2.3.3.12 Masters Proposal Requirements

A Master's proposal covers **the same elements** but typically omits:

i.   **Research Philosophy** section.

ii.   In-depth **Research Strategy** justification (unless critical to scope).

Focus is on:

i.   Research design & method.
ii.   Population.
iii.   Sampling technique.
iv.   Data collection tools & procedure.
v.   Data analysis plan.
vi.   Quality assurance.
vii.   Ethical considerations.

2.3.3.13 Chapter Summary

Purpose & Content

i.   Summarize chosen methods and justify them.

ii.   Show how methodology ensures objectives will be met.

iii.   Provide a bridge to **Results** chapter.

Doctoral-Level Quality Criteria

i.   Links back to conceptual/theoretical framework.

ii.   Restates rigor, validity, and ethical compliance.

2.3.4   Submission of the proposal

The submission and approval of a Master's or Doctoral proposal is a **multi-stage academic quality assurance process** designed to ensure:

i.   **Rigorous scholarly merit**.

ii.   **Feasibility** of the research within the given timeframe.

iii.   **Institutional alignment** with academic and ethical standards.

The process includes **oral defence**, **multi-level board review**, and **formal Senate approval**.

2.3.4.1   Proposal Defence and Departmental Review

Stage 1: Departmental Graduate Studies Committee (DGSC) Defence

i.   Oral Presentation:

ii.   Delivered before the Departmental Graduate Board.

iii.   Attendance includes:

iii.1. Members from the candidate's department.

iii.2. Members from other departments within the faculty.

iii.3. Representative from the **School of Graduate Studies (SGS)**.

iv.   **Evaluation Outcomes**:

iv.1.**Pass** – Proceed to next stage without changes.

iv.2.**Pass subject to corrections** – Minor revisions; no re-defence required.

iv.3.**Re-defend** – Major revisions requiring another presentation.

iv.4. **Fail** – Candidate must re-develop and resubmit at a later date.

v.   **Computing-Specific Presentation Tips**:

v.1. **Include system architecture diagrams, algorithm pseudocode, dataset samples in slides.**

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v.2. Present simulation or prototype demos if available.

v.3. **Use quantitative benchmarks** where possible.

vi. **Quality Criteria at DGSC**:

vi.1. Problem clarity.

vi.2. Technical novelty.

vi.3. Feasibility of methodology.

vi.4. **Presentation professionalism**.

2.3.4.2 School Graduate Studies Committee (SGSC) Review

Stage 2: Submission to SGSC

i. **Present six spiral-bound copies to the SGSC for review.**

ii. **SGSC examines:**

ii.1. Academic rigor.

ii.2. Ethical compliance.

ii.3. Supervisor qualifications and capacity.

iii. **If approved:**

iii.1. Candidate makes any final adjustments.

iii.2. Proposal forwarded to SGS.

2.3.4.3 School of Graduate Studies (SGS) Review

Stage 3: SGS Assessment

i. SGS reviews:

i.1. Consistency with university research priorities.

i.2. Compliance with institutional ethics policies.

i.3. Adherence to **Section 2.12 formatting requirements**.

ii. If approved:

ii.1. SGS forwards details of the proposal to **Senate** for final approval of:

- Research topic.

- Supervisor(s).

2.3.4.4 Senate Approval

Stage 5: University Senate

i. Official endorsement of:

   i.1. The research proposal.

   i.2. Appointment of the main supervisor and co-supervisors.

ii. Only after Senate approval can the research **commence formally**.

2.3.4.5 Procedural Compliance Requirements

A student intending to submit a proposal must:

i. **Graduate Research Pre-Proposal Form**
   i.1.1. Completed and approved (see Appendix IX).

ii. **Departmental Defence Approval**
   ii.1.1. Successfully defend proposal before DGB.

iii. **Submission to SGSC**
   iii.1.1.   After DGSC approval, present **six spiral-bound copies** to SGSC.

iv. **Submission to SGS**
   iv.1.1.   After SGSC approval, submit **six spiral-bound copies** to SGS.

v. **Supervisor Copies**
   v.1.1. Provide **one spiral-bound copy** to each supervisor for reference.

2.3.4.6 Computing-Research Submission Tips

i. **Technical Appendices**:

   i.1. Include **source code listings**, **system architecture diagrams**, **dataset documentation** in appendices.

ii. **Prototype/Demo Readiness**:

   ii.1. If possible, have a functional prototype or simulation output to demonstrate feasibility.

iii. **Formatting Validation**:

   iii.1. Run a **final cross-reference check** (all tables, figures, code listings correctly numbered and cited).

iv. **Digital Archiving**:

   iv.1. Keep a **PDF version** with embedded fonts and all figures at publication quality.

2.3.4.7 Quality Assurance Checklist

i. Oral defence delivered with clarity and technical depth.

ii. Bound copies meet Section 2.12 layout and formatting.

iii. All copies signed by supervisors and student.

iv. Ethical clearance obtained where applicable.

v. All review stages documented (DGB → FGB → SGSC → SGS → Senate).

vi. Copies for supervisors provided.

CHAPTER THREE

THESIS FORMAT AND STRUCTURE

3.1 Thesis Structure Overview

A thesis submitted for examination must be prepared in accordance with the **School of Graduate Studies (SGS)** regulations and discipline-specific standards for computing and informatics research.

A complete thesis comprises three main parts:

1. **Preliminary Pages** – Formal front matter that orients the reader and establishes the academic and institutional context.

2. **Main Body (Text)** – The substantive research content, logically organized into chapters and sections.

3. **Supporting Pages** – Scholarly record and supplementary materials, including references, appendices, and other research artefacts.

3.2 Preliminary Pages

The preliminary pages follow the SGS-prescribed order and formatting requirements. For computing theses, these include:

i. Title page (per SGS template).

ii. Declaration and certification pages.

iii. Abstract.

iv. Dedication (optional).

v. Acknowledgements.

vi. Table of contents.

vii. List of appendices.

viii. List of tables.

ix. List of figures.

x. List of abbreviations and acronyms.

xi. Glossary of computing-specific terms (if needed).

3.2.1 Computing-Specific Considerations

Given the nature of computing and informatics research, the following may be included as appendices or linked via institutional repositories:

i. Source code repositories (URL + documentation).

ii. Dataset descriptions and metadata.

iii. Extended algorithm proofs.

iv. Performance benchmark results and logs.

v. API specifications or architectural blueprints.

vi. Simulation configuration files.

Note: Large datasets, software packages, or executable files should be hosted externally (e.g., GitHub, Zenodo, institutional repository) with permanent links provided in the appendices.

3.2.2 Quality Assurance Checklist (Pre-Submission)

Before submission, verify that:

i. Margins, font, spacing, and headings comply with the **Consolidated Formatting & Style Guide**.

ii. Pagination is continuous and correctly formatted.

iii. Figures, tables, and code listings are properly numbered, captioned, and referenced.

iv. Preliminary pages follow the SGS-prescribed order.

v. Binding method, cover color, and volume count meet university requirements.

vi. All computing artefacts are fully documented and accessible.

vii. References are complete, consistent, and in the correct style (APA or IEEE).

Main Body: Chapters and Major Sections

The **main body** presents the research in a logical sequence, from background to conclusions. Each chapter begins on a new page, with a maximum of three heading levels used consistently throughout.

3.3 Standard Chapter Structure

For **empirical computing research**, the thesis typically follows this structure:

1. **Chapter One: Introduction**

    i.   Background of the study.

    ii. Problem statement.

    iii. Purpose and objectives.

    iv. Research questions or hypotheses (not both).

    v.   Justification and significance.

    vi. Scope, assumptions, and limitations.

2. **Chapter Two: Literature Review**

    i.   Critical review of related work.

    ii. Theoretical/conceptual framework.

    iii. Identification of research gaps.

3. **Chapter Three: Research Methodology**

    i.   Research philosophy and design.

    ii. Strategy and sampling.

    iii. Data collection tools and procedures.

    iv. Data analysis methods.

    v.   Quality assurance (validity, reliability, reproducibility).

    vi. Ethical considerations (including data protection and responsible AI use).

4. **Chapter 4: Results Presentation and Discussion**

    i.   Presentation of results (including demographic data where relevant).

    ii. Interpretation and comparison with existing literature.

    iii. Implications for theory, practice, and policy.

5. Chapter 5: Model / Architecture / Framework Development (For Design-Oriented Research)

    i.   Requirements analysis.

    ii. Design principles and rationale.

    iii. Architectural diagrams and specifications.

    iv. Development tools and environment.

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v. Iterative refinement and testing.

vi. Validation and performance metrics.

6. Chapter 6: Summary, Conclusion, and Recommendations

i. Summary of findings.

ii. Contributions to knowledge.

iii. Limitations of the study.

iv. Recommendations for practice and future research.

3.4 Proposal-to-Thesis Transition Guide

When converting a proposal into a thesis:

i. **Update Tense:** Change from future to past tense throughout Chapters 1–3.

ii. **Expand Literature Review:** Include any new developments published after the proposal defence.

iii. **Methodology:** Reflect any deviations from the original plan, with justification.

iv. **Add Results and Model Chapters:** Insert Chapters 4 and 5 based on findings and artifact development.

v. **Update Abstract:** Rewrite to summarize completed research.

vi. **Check Alignment:** Ensure stated objectives match presented results.

3.5 Chapter Four: Results and Discussion

3.5.1 Purpose of the Chapter

Chapter Four is where the **core findings** of your study are presented, analyzed, and interpreted. It should provide a **clear, objective, and logical** account of the results, linking them back to:

i. **The research objectives and questions** set out in **Chapter One**.

ii. **The theoretical and/or conceptual framework** established in **Chapter Two**.

iii. **Relevant prior literature** to highlight similarities, differences, and new contributions.

In **computing and informatics research**, results presentation may involve:

i. **Algorithm performance evaluation** (e.g., accuracy, precision, recall, F1-score, confusion matrices).

ii.   **System benchmarking** (e.g., throughput, latency, memory usage, CPU load).

iii.   **Network simulation results** (e.g., jitter, packet loss, hop count, congestion analysis).

iv.   **Human–Computer Interaction (HCI) usability metrics** (e.g., task completion time, user satisfaction, error rates).

v.   **Dataset characteristics and statistical properties** (e.g., size, feature distribution, missing values).

Note: This chapter **must not** include details of **model, architecture, or framework development**, which are presented separately in **Chapter Five**.

3.5.2   Recommended Structure
A best-practice results and discussion chapter should be divided into **five major sections**, each serving a specific role in guiding the reader from data presentation to interpretation.

3.5.3   Chapter Introduction
The introduction should prepare the reader for what follows by:

a. **Restating the chapter's aim:** Clearly indicate that this section presents results and interprets them in light of research objectives.

b. **Reiterating the specific objectives or research questions** addressed in the chapter.

c. **Outlining the flow of the chapter**, for example:

   i.   Presentation and analysis of demographic or dataset characteristics.

   ii.   Results organized per research objective or question.

   iii.   Interpretation and discussion in relation to the literature and framework.

   iv.   Summary of the main insights.

3.5.4   Demographic Profile or Dataset Characteristics
This section provides essential **context** for interpreting results.

a. **For Human–Participant Studies**

Include variables such as:

   i.   **Age distribution** (e.g., mean, median, standard deviation).

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ii. **Gender distribution** (percentage by category).

iii. **Educational background** (degrees attained, computing-related certifications).

iv. **Years of programming or networking experience**.

v. **Frequency of technology use** (e.g., daily, weekly).

b. **For Dataset-Centric Studies**

Include variables such as:

i. **Number of records/samples**.

ii. **Collection timeframe**.

iii. **Data sources and acquisition method** (e.g., API, web scraping, sensors).

iv. **Feature composition** (numeric vs. categorical variables).

v. **Class proportions** for classification problems.

vi. **Missing data percentages**.

c. **Presentation Guidelines**

i. **Tables**: Use for categorical data (e.g., gender, device type).

ii. **Descriptive statistics**: Report measures such as mean, median, standard deviation for continuous data.

iii. **Figures**:

- o Pie charts for proportions.
- o Bar charts for frequencies.
- o Histograms for distributions.
- o Boxplots for spread and outlier detection.

d. **Interpretation of Demographics/Dataset**

i. Identify **trends**, **imbalances**, or **patterns**.

ii. Comment on **representativeness** and **generalizability**.

iii. For datasets, note **biases** (e.g., class imbalance) and their potential impact on results.

3.5.5 Results Presentation
This is the **heart** of the chapter — where findings are presented **objectively**.

a. **Organization Principle**

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i. Present results **per research objective or question**.

ii. Start each subsection with a **clear restatement** of the objective/question.

b. **Presentation Rules**

i. Do **not** duplicate data in both tables and figures. Choose the most effective format.

ii. Use **consistent numbering** across the chapter:

○ Figures: Figure 4.1, Figure 4.2 …

○ Tables: Table 4.1, Table 4.2 …

iii. Captions should be **descriptive** and **self-contained** so they can be understood without referring to the main text.

3.5.6 Interpretation and Discussion
This section **explains** the results and situates them within the **existing body of knowledge**.

a. **A. Linking to Objectives:** Explicitly state whether findings **support or refute** each objective/question.

b. **Comparing with Literature:**

i. Identify **convergences** with prior studies.
ii. Identify **divergences** and explain them.

c. **Identifying Patterns**

i. Highlight **relationships** or **dependencies**.

ii. Discuss **unexpected findings**.

d. **Discussing Implications**

i. **Theoretical:** Contribution to academic understanding.

ii. **Practical:** Application in real systems or processes.

iii. **Policy:** Recommendations for standards, regulations, or industry adoption.

e. **Limitations of Results:**Mention factors that may affect validity or generalizability:

i. Dataset limitations.

ii. Hardware/software constraints.

iii.   Simulated environment vs. real-world conditions.

3.5.7   Chapter Summary

The summary should:

i.   Restate **key demographic/dataset observations**.

ii.   Summarize **main results** and their **interpretations**.

iii.   Identify **most significant contributions**.

iv.   Prepare the reader for **Chapter Five**, noting:

      o   Which findings informed model/architecture/framework design.

      o   How results will be integrated into the developed solution.

3.5.8   Quality Control Checklist

Before submitting Chapter Four:

i.   Demographic or dataset details are **clear, complete, and relevant**.

ii.   Results are **logically organized** by objective/question.

iii.   Tables and figures are **consistently formatted** and **properly cited**.

iv.   Interpretations are **insightful and analytical**, not merely descriptive.

v.   Literature comparisons are **relevant and up-to-date**.

vi.   Limitations and implications are **explicitly addressed**.

vii.   There is a **clear transition** to Chapter Five.

3.6 Chapter Five: Model / Architecture / Framework Development

3.6.1   Chapter Overview

This chapter documents the **design-science contribution** of the research — the model, architecture, or framework developed to address the research problem. It translates the **research findings** into a **practical, validated solution**.

The chapter builds directly on:

- **Findings and interpretations from Chapter Four**, especially performance gaps, system bottlenecks, or opportunities for improvement.

- **Research objectives** defined in Chapter One.

- **Gaps and limitations** identified in the literature review (Chapter Two).

Where relevant, the chapter also shows how the proposed solution:

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- Improves on **state-of-the-art approaches**.

- Incorporates **innovations in efficiency, scalability, usability, or security**.

- Is grounded in the **theoretical/conceptual framework** guiding the study.

3.6.2   Rationale for Development

This section explains **why** the model/architecture/framework is necessary.

3.6.2.1 Link to Results

Identify specific findings from Chapter Four that **justify the need** for the solution.

Example: "System evaluation in Chapter Four revealed a 23% latency overhead in the baseline model, necessitating an optimized load-balancing mechanism."

3.6.2.2 Problem-to-Solution Mapping

Provide a **traceable link** from:

- Problem statements (Chapter One) →

- Research questions/objectives →

- Design requirements →

- Final proposed solution.

3.6.2.3 Innovation Statement

Highlight novelty, for example:

- Introduction of **new algorithms** or hybrid methods.

- Significant **efficiency or accuracy gains**.

- Improvements in **security, fault tolerance, or user experience**.

3.6.2.4 Alignment with Theoretical/Conceptual Framework

Explain how the design is **theoretically grounded**:

- Which models or principles from Chapter Two influenced the design.

- How the solution extends or adapts those theories.

3.6.3   Design Objectives and Requirements

Clearly outline **what the solution must achieve**.

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3.6.3.1 Functional Objectives

Core capabilities, for example:

- Real-time anomaly detection.
- Distributed data processing.
- Adaptive resource allocation.

3.6.3.2 Non-Functional Objectives

- **Performance targets:** Latency thresholds, accuracy benchmarks.
- **Scalability:** Number of concurrent users or nodes supported.
- **Security/Privacy:** Compliance with GDPR, ISO/IEC 27001.
- **Usability:** Accessibility features, low learning curve for end-users.

3.6.3.3 Derived Requirements

Derived from:

- User feedback.
- Dataset characteristics.
- Observations in Chapter Four.

3.6.4   Conceptual Design

Provide a **high-level blueprint**.

3.6.4.1 Conceptual Model Diagram

Include a **clear, labelled diagram** showing:

- Major components.
- Interactions.
- Data flows.

3.6.4.2 Narrative Description

Explain the **role** of each component and **flow of data** through the system.

3.6.4.3 Design Principles Applied

E.g., modularity, scalability, reusability, security-by-design.

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3.6.5 System Architecture

Translate the conceptual design into **technical specifications**.

3.6.5.1 Architectural Diagrams

a. **High-level architecture** showing layers (presentation, business logic, data).

b. **Interfaces and communication channels**.

c. **Deployment view** (cloud/on-premise/hybrid).

3.6.5.2 Technology Stack Selection

Specify:

- Programming languages.
- Databases.
- Frameworks and libraries.
- Hardware requirements.

3.6.5.3 Component Descriptions

- Detailed explanation of modules/subsystems.
- Dependencies and integration points.
- APIs and protocols used.

3.6.6 Model/Framework Development Process

a. **Development Approach:** Identify the approach (Agile, waterfall, iterative prototyping) and justify its selection.

b. **Implementation Details**

    i. Algorithms and logic.
    ii. Data structures and database schema.
    iii. Tools, simulators, IDEs.

c. **Justification of Design Choices:** Explain **why** each method, algorithm, or technology was selected, linking back to Chapter Four results.

3.6.7 Validation and Testing

Show how the solution was **evaluated**.

a. **Validation Strategy:** E.g., simulations, field deployment, controlled experiments.

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b. **Testing Procedures**

    i. Functional testing.

    ii. Performance benchmarking.

   iii. Stress and load testing.

   iv. Usability testing.

c. **Metrics and Evaluation Criteria**

    i. Accuracy, precision, recall.

    ii. Latency, throughput, resource utilization.

   iii. Security robustness.

d. **Results Summary:** Summarize **key validation outcomes** and note **limitations**.

3.6.8 Comparison with Existing Solutions

Analytically compare against **state-of-the-art**.
Criteria may include:

    i. Feature set.

    ii. Performance.

   iii. Complexity.

   iv. Cost/efficiency trade-offs.

3.6.9 Implementation Challenges and Mitigation

Discuss difficulties faced and solutions applied:

    i. **Technical:** Integration issues, platform incompatibilities.

    ii. **Data-related:** Missing or imbalanced data.

   iii. **Resource-related:** Limited computation or storage.

3.6.10 Chapter Summary

Summarize:

    i. Purpose and key achievements of the development process.

    ii. How the proposed solution addresses **objectives, literature gaps, and real-world needs**.

   iii. Transition to Chapter Six (Summary, Conclusions, and Recommendations).

3.7 Chapter Six: Summary, Conclusion, and Recommendations

3.7.1 Chapter Overview

Chapter Six synthesizes the **entire research journey** into a structured and concise account that integrates the problem, process, results, and contributions.

Its purposes are to:

a. Summarize the **research process**, **key findings**, and **their significance**.

b. Draw conclusions **directly linked** to the research objectives stated in Chapter One.

c. Reflect on **theoretical, practical, and policy implications** of the work.

d. Acknowledge **limitations** that may have influenced findings or their interpretation.

e. Provide **specific, actionable recommendations** for:

    i. **Practice** – Industry and organizational adoption.

    ii. **Policy** – Standards, compliance frameworks, and governance.

    iii. **Research** – Directions for further academic work.

In computing-focused studies, this chapter also **demonstrates how the developed model, architecture, or framework (Chapter Five)** advances the state of the art in the field.

3.7.2 Summary of the Study
This section condenses the research journey **without introducing new information**.

3.7.2.1 Background and Problem Statement

    i. Restate the **computing problem** addressed and its **relevance**.

    ii. Summarize the **research gap** identified in Chapter Two.

    iii. Highlight why addressing this gap has both **theoretical value** (advancing computing knowledge) and **practical importance** (solving real-world challenges).

3.7.2.2 Research Objectives and Questions

    i. List the original research objectives and/or questions.

    ii. Briefly note how each was **addressed through methodology, analysis, and development**.

3.7.2.3 Methodology Overview

    a. Summarize the **research design**, data collection methods, datasets/tools, and analysis techniques.

    b. Highlight any **innovative computing-specific approaches**, such as:

        i. Custom algorithm design.

        ii. Simulation-based performance evaluation.

        iii. Integration of open-source frameworks or AI-powered optimizations.

3.7.3 Key Findings

    a. Recap **major results** from:

        i. **Chapter Four** – Results Presentation and Discussion.

        ii. **Chapter Five** – Model/Architecture/Framework Development and Validation.

    b. Provide a **high-level synthesis** showing how these results address the **research problem** and fulfil the **objectives**.

3.7.4 Conclusions

This section distils the **core takeaways** of the research, showing their direct relationship to the **study objectives**.

3.7.4.1 Alignment with Objectives

For each objective:

    i. State whether it was achieved.

    ii. Provide evidence from **findings and model validation**.

    iii. Explain the contribution to **computing theory** or **practice**.

3.7.4.2 Theoretical and Practical Implications

a. **Theoretical Contributions:**

    i. Enhancements to existing computing models, algorithms, or architectures.

    ii. Validation or extension of the theoretical/conceptual framework from Chapter Two.

b. **Practical Contributions:**

    i. Real-world applications in AI, cybersecurity, networking, cloud computing, or software engineering.

    ii. Potential for integration into **commercial, government, or open-source systems**.

3.7.4.3 Significance of the Developed Model/Framework

i. Show **added value** over existing solutions.

ii. Highlight **measurable improvements** (e.g., 15% accuracy gain, 30% latency reduction).

iii. Indicate potential for **scalability** and **wider adoption**.

3.7.4.4 Study Limitations

Acknowledging limitations **strengthens academic credibility** and helps contextualize the findings.

Possible limitations in computing research:

a. **Data-related:**

    i. Limited dataset diversity.

    ii. Class imbalance.

    iii. Missing or noisy values.

b. **Technical:**

    i. Hardware or GPU constraints.

    ii. Algorithm scalability issues.

c. **Scope:**

    i. Experiments limited to simulated environments vs. live deployment.

d. **Time/Resources:**

    i. Constraints on iterative testing and tuning.

For each limitation:

i. Describe its **impact on results**.

ii. Suggest **how future research could address it**.

3.7.5 Recommendations

All recommendations must be **evidence-based** and **derived from the study's findings**.

3.7.5.1 Recommendations for Practice

i. Steps for integrating the developed **model/architecture/framework** into existing systems.

ii. Required **technical infrastructure and training** for adoption.

iii. Guidelines for **maintenance, monitoring, and performance tuning**.

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3.7.5.2 Recommendations for Policy and Standards

i. Suggested **updates to computing, data security, or AI governance policies**.

ii. Proposals for incorporating results into **international standards** (e.g., ISO/IEC, IEEE, NIST).

iii. Ethical AI guidelines, privacy safeguards, and security compliance requirements.

3.7.5.3 Recommendations for Further Research

i. Unanswered research questions that emerged during the study.

ii. Extensions to **new domains or datasets**.

iii. Testing with **alternative algorithms, hardware platforms, or architectures**.

iv. Long-term deployment studies to assess **sustainability and reliability**.

3.7.6   Chapter Summary

Conclude the chapter by:

i. Recapping the **progression** from problem identification (Chapter One) to solution delivery (Chapter Five).

ii. Stating the **overall contribution** to computing theory and practice.

iii. Reinforcing the **value and relevance** of the research to **both academia and industry**.

3.7.7   Quality Assurance Checklist

Before finalizing Chapter Six, ensure that:

i. No **new data** or unrelated topics are introduced.

ii. All conclusions are **evidence-based** and **tied to research objectives**.

iii. Limitations are **clearly acknowledged**.

iv. Recommendations are **practical, relevant, and justified**.

v. The closing statement **underscores the research impact**.

3.8 Technical Requirements

3.8.1   Title Page

The first page bears the title of the Thesis in Capital letters with the full names of the candidate in small bold letters below.

The title should describe the content of the thesis accurately and concisely. Normally omitting words such as "An investigation…" "An analysis …," or "A study …" which is redundant. All thesis are investigations, analyses or studies of one kind or another.

The legend "A Thesis Submitted to the Graduate School in Partial Fulfilment of the Requirements for the Degree of (Insert the name of the degree) of Kibabii University" shall appear in the middle of the page.

The date of submission shall appear below the legend in the form of month and year and centred.

3.8.2   Declaration Page

The section must contain:

A signed and dated declaration by the candidate with the following statement: "This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award."

3.8.3   Certification page

A signed and dated certification by the University Supervisors with the following statement "We confirm that the work in this Thesis was carried out by the candidate under our supervision as University supervisors

3.8.4   Dedication

A dedication statement not exceeding 25 words may follow the declaration beginning on a separate page. Dedication should as much as possible be limited to one person or one party or one institution or else it loses its significance and value. Reason for dedicating should not be given or else it becomes a mini acknowledgement.

3.8.5   Acknowledgments

Acknowledgement not exceeding 200 words should follow dedication, beginning on a separate page, with the surname and initials of the author on the left-hand corner below it.

See acknowledgement of this guide

3.9 The Thesis layout

A complete Master's or Doctoral thesis shall conform to the sequence and components outlined below. Each section must follow the prescribed format and refer to the relevant appendices in this guide for detailed specifications.

Table 3. 1 Thesis layout

Item	Reference for Format
Title Page	See Appendix II
Declaration and Certification Page	See Appendix III
Copyright Page	See Appendix V
Dedication Page	See Appendix IV
Acknowledgements	See the Acknowledgements section of this document
Abstract	See Section 3.9
Table of Contents	See Section 3.10
List of Appendices	See Appendix VII
List of Tables	See Appendix VII
List of Figures	See Appendix VIII
List of Abbreviations and Acronyms	See the List of Abbreviations and Acronyms section of this document
Main Chapters (1, 2, 3, …)	See Chapter Layout Guidelines in this document
References	See Referencing Guidelines in this document
Appendices/Annexes	See Appendix VII

Publications (if any)	See Section 3.16

3.9.1 Thesis Production

The production of the original master copy and all required copies of a thesis must adhere to the highest academic and archival standards to ensure:

a) **Permanence**: The thesis should be produced using materials that ensure long-term preservation without significant deterioration.

b) **Readability of Format and Content**: The layout, fonts, and structure must allow for easy reading and comprehension.

c) **Compatibility with Microfilm Reprints**: The format must support reproduction in microfilm form.

d) **Legibility of Print**: All text, figures, and tables must be clear and sharp.

e) **Uniformity**: All copies must be consistent in appearance, formatting, and binding.

Careful attention must be given to both the materials and the methods used in producing the original master and all copies. Final copies of the thesis shall be **bound in high-quality university-colour covers**, specific to the degree type (Master's or Doctoral), with appropriate lettering as specified in the Common Regulations for Higher Degrees.

Lettering on the thesis spine shall include:

- The candidate's **surname and initials**, with the first letter of the surname starting **4 cm from the top** of the spine.

- The **name of the degree** appearing in the middle of the spine.

- The **year of submission** placed at the bottom of the spine, leaving a **5 mm space** from the lower edge.

A total of **six copies** of the thesis shall be produced — one master copy and five additional copies for distribution as required by the University.

3.9.2 Thesis Examination

The examination of a thesis involves a comprehensive evaluation to determine whether the submitted work meets the academic, professional, and institutional standards required by Kibabii University. The assessment shall specifically establish whether the thesis:

i. **Conforms in Presentation**: The thesis adheres to the University's approved regulations for thesis writing, including formatting, structure, and referencing requirements.

ii. **Demonstrates Original Thought and Subject Mastery**: The work reflects the candidate's capacity for independent, critical, and original thinking, as well as a deep understanding of the subject area.

iii. **Is Adequate in Form and Content**: The thesis is logically structured, clearly written, and sufficiently comprehensive in scope, with coherent arguments supported by appropriate evidence.

iv. **Makes a Distinct Contribution to Knowledge**: The study advances the field through the introduction of new knowledge, theory, methodology, or practical application.

The evaluation shall be carried out in accordance with the University's approved procedures for thesis examination, as stipulated in the Common Regulations for Higher Degrees.

3.9.3 Thesis Submission

The process of submitting a thesis for examination shall follow the procedures outlined below:

i. **Notice of Intention to Submit**: At least **three months** prior to the intended submission date, the candidate shall give written notice to the **Dean, School of Graduate Studies (SGS)**, through the **Supervisor**, the relevant **Departmental Graduate Studies Committee (DGSC)**, and the **School Graduate Studies Committee (SGSC)**, using **three copies** of the prescribed form **Ref. KIBU/SGS/BPS/ADM/2** (Appendix XIII) obtainable from SGS. Copies of this notice shall also be submitted to the **Chairman of Department** and the **Dean of the Faculty**.

ii. **Details to be Included in the Notice**: The notice must indicate:

- The **title of the thesis**.

- An **abstract** of the completed work not exceeding **500 words**.

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- The **intended date** of thesis submission.

iii. **Submission of Theses**: On or before the intended date, the candidate shall submit **six copies** of the thesis, **loosely bound**, together with a **soft copy** in an approved electronic format. All copies must be **duly signed** by the candidate and **all supervisors**. The theses shall be submitted to the **Dean, SGS**, through the **Chairman of the DGSC** and the **Chairman of the SGSC**, accompanied by a formal forwarding letter.

3.9.4 Submission and Examination of Thesis Process

The submission and examination of a thesis shall follow the procedures outlined below:

i. **Notice of Intention to Submit**: At least twelve (12) weeks before the end of the fourth semester, a candidate shall give written notice of intent to submit a thesis to the **Dean, School of Graduate Studies (SGS)** through the **Supervisor(s)** and **Head of Department**. Copies of the notice shall also be submitted to the **Dean of the Faculty/School** and the **Chairpersons** of the **Departmental Graduate Studies Committee (DGSC)** and **Faculty Graduate Studies Committee (FGSC)**. The notice shall include a signed abstract not exceeding **500 words**, which must be countersigned and dated by the Supervisor(s).

ii. **Appointment of Examiners**: Within four (4) weeks after the notice of intent is issued, the Chairperson of the DGSC shall recommend to the Dean, SGS, through the respective FGSC, the appointment of one **External Examiner**, two **Internal Examiners**, and two **Faculty Representatives** for the candidate's Panel of Examiners. The curriculum vitae (CV) of Examiners who are not staff of Kibabii University shall be submitted for consideration by the Board, SGS, if they are being appointed for the first time. The Senate shall, on the recommendation of SGS, appoint for each candidate a Panel of Examiners for the oral defense consisting of:

- The Dean, SGS, or representative.

- One External Examiner.

- Two Internal Examiners, at least one of whom shall be from the relevant department.

- The Candidate's Supervisor(s).

- Two Faculty Representatives.

iii. **Faculty Representatives**: Faculty representatives shall normally be from Kibabii University but preferably not from the same department as the candidate. They shall not be required to read the thesis but will have access to the thesis and examiners' reports. Their role is limited to assessing the candidate's performance during the oral defense.

iv. **Submission of Thesis Copies**: Each candidate shall submit **six (6) spiral-bound copies** of the thesis and a soft copy in the approved format to the Dean, SGS. All copies must be prepared according to the Senate-approved thesis format, signed by the candidate and Supervisor(s), and dated.

v. **Distribution of Thesis Copies and Examiners' Reports**: Copies of the thesis shall be distributed to the Internal and External Examiners and the Supervisor(s). The Examiners shall submit detailed assessment reports to the Dean, SGS, with copies to the Registrar, Academic Affairs, within **four (4) weeks** of receipt of the thesis. An honorarium shall be paid upon timely submission of satisfactory reports. Each examiner's report shall indicate:

- Whether the thesis is adequate in form and content.

- Whether the thesis demonstrates adequate understanding of the subject.

- Whether the thesis requires revision or corrections.

- The mark to be assigned to the thesis.

vi. **Replacement of Delayed Examiners**: If an Examiner's report is delayed for more than one (1) month, the Dean, SGS, in consultation with the DGSC Chairperson, shall appoint a new examiner.

vii. **Scheduling of Oral Defense**: Upon receipt of all examiners' reports, the Dean, SGS shall set a date for the oral defense, normally within **three (3) weeks**. For Master's candidates, the External Examiner is not required to attend the oral defense, but their report and grade will be considered during the evaluation.

viii. **Oral Examination**: The oral defense shall be open to the public. Members of the public may ask questions, but their input may or may not contribute to the assessment. The defense shall

last a maximum of **two (2) hours**, with the candidate allotted **20 minutes** for presentation, followed by questions and answers. Assessment shall be as follows:

- Each panel member, except the Supervisor(s), shall assign a grade not exceeding **20%** for the oral defense. The mean score shall be designated **Mark Y**.

- The Chairman of the Board of Examiners shall calculate the mean score from the three examiners' written thesis assessments, designated **Mark X**.

- The final thesis mark shall be computed using the formula: **Thesis Mark = (0.8X + Y)%**.

- The candidate must pass both the oral defense and the written thesis, with an overall pass mark of **50%**.

- If the External Examiner fails the candidate, they may be invited to attend the defense.

ix. **Post-Defense Decisions**: After the oral defense, the Board of Examiners shall decide whether:

a) Whether the candidate defended the thesis adequately and the whether the candidate should be declared pass outright, thus assigning the grade to the thesis, and recommending the award of the degree subject to the candidate fulfilling other requirements in respect of course work.

b) Whether the thesis needs minor revision and/or corrections over the above recommendations contained in the Examiners' Reports, thus assigning the grade to the thesis, and recommending submission of the final revised thesis normally **after one month but within three months**, duly certified by the supervisors.

c) Whether the thesis needs major revision and/or corrections over the above recommendations contained in the examiners' reports, thus assigning the grade to the thesis, and recommending submission of the final revised thesis normally **after three months but within six months**, duly certified by the supervisors.

d) Whether the thesis needs major revision and corrections, and recommending re submission of the thesis **after six months** for fresh assessment by two of the Internal Examiners. Should the candidate still fail at this stage, the candidate must submit a revised thesis within six (6) months for fresh assessment by all the three Examiners and appear for a second defense thereafter.

e) Whether the thesis needs a complete overhaul, including collection of more data and/or change of methodology, and recommending re-submission within nine months for fresh assessment by all the three Examiners and a second defense thereafter.

f) Whether the thesis is unacceptable for the award of degree of Kibabii University, and thereby declaring the candidate to have failed outright.

x. **Number of Defense Attempts**: A thesis may not be defended more than **twice**.

xi.   **Failure after Oral Defense**: A candidate who fails overall after the oral defense shall not be awarded the degree.

CHAPTER FOUR
PLAGIARISM

4.1 Introduction

Academic research is grounded in **integrity, originality, and transparency**. One of the most serious violations of these principles is **plagiarism**, which undermines the credibility of scholarship and the trustworthiness of research outputs.

In the modern research environment, plagiarism risks are no longer limited to copying from printed books, journal articles, or online materials. They now include **misuse of AI-powered tools** such as ChatGPT, Copilot, Midjourney, DALL·E, or other generative AI systems. These tools can assist researchers, but if used without **proper acknowledgement, verification, and ethical safeguards**, they can lead to **AI-assisted plagiarism**.

This chapter explains:

a.   What constitutes plagiarism.

b.   How to avoid it.

c.   How to use AI tools **ethically and safely** in academic work.

d.   The consequences of plagiarism under **Kibabii University** regulations.

4.2 Definition of Plagiarism

Plagiarism is **the act of using another person's intellectual work—words, ideas, data, designs, code, or creative expressions—without proper acknowledgement, thereby representing them as one's own**.

Plagiarism may involve the uncredited use of:

a.   Words, phrases, ideas, or arguments from:

i.   Printed books, journals, magazines, conference proceedings, and newspapers.

ii.   Web pages, blogs, online articles, and social media content.

iii.   Computer programs, source code, scripts, and software packages.

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b. Published visuals and creative works, such as:

    i.   Figures, tables, diagrams, illustrations, flowcharts, maps, schematics, or infographics.

    ii.   Photographs, images, animations, or other digital media.

c. Data and personal communications, including:

    i.   Interview transcripts, speeches, or recorded discussions.

    ii.   Datasets, survey responses, and laboratory measurements.

d. AI-generated content, including:

    i.   Text, code, diagrams, or datasets produced by AI systems without disclosure of AI use and without verification of originality and accuracy.

4.3 Forms of Plagiarism

4.3.1   Direct (Verbatim) Plagiarism

Copying text, code, or visuals word-for-word from a source—including AI outputs—without quotation marks, formatting, or citation.

Example:

Using a paragraph from a journal article or an AI-generated report in your thesis without attribution.

4.3.2   Mosaic or Inadequate Paraphrasing

Changing a few words or reordering sentences from the source but keeping its structure and ideas, without proper citation or with insufficient changes.

Example:

Replacing synonyms in a copied paragraph but keeping sentence flow identical to the source.

4.3.3   Self-Plagiarism

Reusing one's own previously published or submitted work (e.g., coursework, conference papers, or prior theses) without disclosure or approval.

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Example:

Including sections of your Master's dissertation in your PhD thesis without citation.

4.3.4 AI-Assisted Plagiarism

Using AI-generated text, code, or visuals without:

a. Declaring AI as a source.

b. Reviewing and editing AI output for originality and factual correctness.

c. Ensuring compliance with academic and ethical standards.

Example:

Using ChatGPT to write a literature review and pasting the output directly into the thesis without modification or acknowledgement.

4.4 Detection of Plagiarism

Modern plagiarism detection systems use **text-matching, semantic analysis, and AI-content recognition** to detect copied or machine-generated material. Common tools include:

a. **Turnitin** – for text similarity analysis against global academic databases.

b. **iThenticate** – for professional-level manuscript screening.

c. **Copyscape** – for web content similarity checks.

d. **AI-detection tools** – to flag uncredited generative AI content.

Even paraphrased content can be detected because algorithms analyse **semantic meaning**, not just word-for-word matches.

4.5 Consequences of Plagiarism

Plagiarism is classified as **academic misconduct** under Kibabii University regulations.

If detected at any stage, it may lead to:

a. Immediate **failure of the thesis**.

b. **Termination of candidature**.

c. Referral to the University Disciplinary Committee.

d. **Revocation of degree** if discovered after graduation.

e. Notification to **professional and licensing bodies** where applicable.

4.6 How to Avoid Plagiarism

4.6.1   General Principles
Always **acknowledge the source**—whether human-authored or AI-generated—whenever another person's or system's work influences your own. This includes paraphrasing, summarizing, or quoting.

4.6.2   Copying
Do not copy from any source—including AI outputs—without proper acknowledgement. If copying is unavoidable, follow quoting guidelines.

4.6.3   Quoting
Direct quotations are acceptable if:

a. Quotation marks or block formatting are used.

b. The quote is **identical to the original**.

c. An in-text citation is included in an accepted style (e.g., APA, IEEE).

d. For AI outputs, citations must include:

    i.   The AI tool's name and version.

    ii.   The developer (e.g., OpenAI).

    iii.   The date accessed.

    iv.   A brief description of the prompt or context used.

4.6.4   Paraphrasing
Paraphrasing is rewriting another's ideas in your own words **while maintaining the original meaning** and giving credit.

a. Acknowledge the source in each paragraph that uses it.

b. When paraphrasing AI output, also declare its origin and note that you reviewed and edited it.

4.6.5   General Indebtedness
Any influence drawn from existing literature—whether on your reasoning, argumentation, or methodology—must be properly cited, even when no direct quotations are used.

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4.7 Ethical and Safe Use of AI in Research

Artificial Intelligence (AI) technologies offer significant potential to enhance research processes; however, their use must be governed by principles of academic integrity, transparency, and ethical responsibility. All AI-assisted activities must be clearly acknowledged, verifiable, and compliant with institutional and legal standards.

4.7.1 Acceptable Use of AI Tools

AI tools may be appropriately employed in the research process for the following purposes:

- **Data Analysis:** Assisting with statistical or computational data processing, provided that the methods are transparent and reproducible.
- **Code and Model Generation:** Supporting the development of software, models, or algorithms, with appropriate attribution and documentation.
- **Language and Formatting Support:** Aiding in the refinement of grammar, structure, and academic formatting, without altering substantive content.

4.7.2 Prohibited Uses of AI

The following applications of AI are strictly disallowed:

- **Data Fabrication:** Using AI to invent data, sources, or citations not derived from actual research.
- **Unverified Output:** Relying on AI-generated results that have not undergone validation or scholarly review.
- **Ghostwriting:** Delegating entire sections of the research document to AI without critical human oversight or intellectual contribution.

4.7.3 Mandatory Disclosure

All uses of AI tools must be explicitly disclosed within the research methodology section or in the acknowledgments. This includes:

- The name and version of the AI tool.
- A description of how the tool was used.
- Any limitations or corrections applied to AI-generated content.

4.7.4 Legal and Ethical Compliance

Researchers must ensure that the use of AI complies with:

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- **Copyright regulations** regarding the reuse of proprietary or training content.
- **Data protection laws** including but not limited to GDPR and Kenya's Data Protection Act.
- **Kibabii University's policies** on academic integrity and ethical research conduct.

4.7.5 Best Practices for Responsible AI Use

To maintain academic standards when employing AI in research, the following best practices must be observed:

i. **Transparency:**

Disclose all instances of AI tool usage, including purpose and scope, to maintain intellectual honesty.

ii. **Verification:**

Independently review and validate all AI-generated outputs to ensure:

- o Factual accuracy.
- o Originality and avoidance of plagiarism.
- o Absence of bias, discriminatory language, or culturally insensitive content.

iii. **Preservation of Academic Judgment:**

AI should augment, not replace, the researcher's critical thinking, scholarly creativity, or interpretive judgment.

iv. **Policy Adherence:**

All AI use must align with university ethical research guidelines, departmental protocols, and national legal frameworks on data use and privacy.

v. **Documentation and Audit Trail:**

Maintain detailed records of:

- o Prompts or queries issued to the AI system.
- o Tool versions and access dates.
- o Manual revisions made to AI-generated content.

4.7.6 Penalties for Plagiarism and AI Misuse

Both plagiarism and unethical AI use will be treated as **academic fraud** and carry the same penalties, which may include:

a. Failing the thesis outright.

b. Termination of candidature.

c. Revocation of an already awarded degree.

d. Formal reporting to professional bodies.

4.8 Editing for Accuracy

The candidate is responsible for ensuring the final thesis is:

a. Factually accurate.

b. Consistent in referencing style.

c. Formatted per **SGS guidelines**.

d. Free of grammatical and typographical errors.

e. Reviewed for correctness of AI-assisted content.

Failure to conduct thorough review can lead to **unintentional plagiarism**.

5 cm

Idris Ibrahim

3 cm

MSc

centred

font 18 point, bold

2004

3 cm

IMPACT OF TECHNOLOGY TRUST ON THE ACCEPTANCE OF MOBILE BANKING TECHNOLOGY WITHIN KENYA

UPPER CASE, FONT 14, CENTRED, NOT MORE THAN 20

IDRIS IBRAHIM

Centred, font 12, bold, no registration number

June 2004

5 cm

Figure 1: Format of Spine and Cover of Dissertation

Appendix I: Research proposal title page

TITLE OF PROPOSAL RESEARCH TOPIC

(UPPER CASE, FONT 14, CENTRED, NOT MORE THAN 20 WORDS)

Name of the candidate

(Centred, font 12, bold, no registration number)

A Research Proposal Submitted to the Graduate School in Partial Fulfilment of the Requirements of the Degree of (insert the degree name) of Kibabii University

Date

(Month, year)

Appendix II: Thesis title page

<div style="text-align: center">

TITLE OF THESIS TOPIC

(UPPER CASE, FONT 14, CENTRED, NOT MORE THAN 18 WORDS)

Names of the candidate

(Centred, font 12, bold, no registration number)

</div>

A Thesis Submitted to the Graduate School in Partial Fulfilment of the Requirements of the Degree of (insert the degree name) of Kibabii University

<div style="text-align: center">

Date

(Month year)

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</div>

Appendix III: Proposal declaration page

<h1 style="text-align:center">DECLARATION AND CERTIFICATION</h1>

<h2 style="text-align:center">Student's Declaration</h2>

I declare that this research proposal is my original work and has not been presented in any other University/Institution for consideration of any certification. This research proposal has been complemented by referenced sources duly acknowledged.

……………………………   Date: ……………….

Name of student

Registration Number

Department

<h2 style="text-align:center">Supervisor's Certification</h2>

This research proposal has been submitted with our/my approval as University Supervisor(s).

_____   Date: _____

Title (e.g. Dr) Names of supervisor,

Name of Department,

Name of organisation (University / Institute)

_____   Date: _____

Title (e.g. Prof) Names of supervisor,

Name of Department,

Name of organisation (University / Institute)

Appendix IV: Dedication

Dedication

This research thesis is dedicated to ….

Appendix IV: Copyright page

<div align="center">

DECLARATION AND COPYRIGHT PAGE

</div>

This thesis is a copyrighted work protected under the Berne Convention, the Copyright Act, 2001, and all other relevant international and national intellectual property laws. No part of this thesis may be reproduced in any form or by any means, in whole or in part, except for short extracts in fair dealing for research, private study, scholarly review, and only with proper acknowledgement. Written permission must be obtained from the Dean, School of Graduate Studies, on behalf of both the author and Kibabii University, for any other use or disclosure.

Appendix V: Appendix page

List of appendices

Appendix VI: List of table's page

List of Tables

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Appendix VII: List of Figure's page

List of figures

Appendix VIII: Graduate Research Pre-Proposal

KIBABII UNIVERSITY

SCHOOL OF COMPUTING AND INFORMATICS

GRADUATE RESEARCH PRE-PROPOSAL

(SUMMARY STATEMENT OF INTENDED RESEARCH TOPIC)*

Name of applicant: …………………………………………………………………….

Qualifications: …………………………………………………………………………...

Department/Faculty: ………………………………………………………………

1. Topic of
research:…………………………………………………………………………………
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……………………………………………………………………………………………

2. Brief statement of research problem:

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3. What are you expecting to achieve?

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4. What research methods are you going to use?

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5. Referees:

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Signature of Applicant: ………………………………Date: ………………………………..

For Department's Use:

Proposed Supervisor (s): ……………………….……………………………...……………………..

      Department: ……………………... ………………………..

Signature of the Head: ………………………..   Date: ………………………………..

For School's Use:

Assigned Supervisor (s):

…………………………………………………..…………………………………………………………

…………………………………………………………………………….………………………………

Department: ………………………...

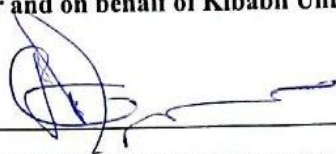Signature of the Dean: ……………………… Date: ……………………………..

* This form should be filled in triplicate.

APPROVAL OF SGS MANUAL FOR PROPOSAL AND THESIS WRITING

This _12TH_ Day of _AUGUST_ 2025

Signed for and on behalf of Kibabii University Senate

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VICE-CHANCELLOR OF KIBABII UNIVERSITY