GUIDE · PHD SYNOPSIS

PhD synopsis format, with an *outline*

A PhD synopsis is a short, structured plan of your research that a university committee approves, usually when you register for the PhD.

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The standard PhD synopsis format has nine parts: **title, introduction, literature review summary, research gap, objectives, methodology, expected outcomes, timeline and references**. Published university guidelines put a registration synopsis at about 6 to 12 pages, but your own university's template decides the length, font and order.

KEY POINTS

- **Nine parts:** title, introduction, literature review summary, research gap, objectives, methodology, expected outcomes, timeline and references.
- **Length depends on the university.** Published guidelines range from 4 to 6 pages (IIT Madras, before thesis submission) and 6 to 10 A4 pages (BAMU, at registration) up to 40 pages (Chandigarh University).
- **"Synopsis" names two documents:** the registration synopsis, which plans the research, and the pre-submission synopsis, which summarises finished work. Check which one is due.
- **Three or four objectives is common,** each one testable with a named dataset, method and metric.
- **Write the gap and the objectives first,** because everything else depends on them.

What is a PhD synopsis, and when do you submit it?

In India the word "synopsis" is used for two different documents, so check which one your university means before you start.

The first is the **registration synopsis**, also called the research proposal. The UGC's PhD Regulations, 2022 define a research proposal as a brief write-up outlining the proposed research, submitted with the application for PhD registration. The same regulations make the Research Advisory Committee responsible for reviewing it and finalising your topic. This is what most students mean by a synopsis, and it is what this guide covers.

The second is the **pre-submission synopsis**: a summary of finished work, submitted shortly before the thesis. The regulations require a presentation before the Research Advisory Committee before you submit the thesis, and several universities, including some in the table further down, ask for a written synopsis at that stage. The thesis that follows it has its own rules, covered in our guide to PhD thesis structure and chapters.

Registration synopsis and pre-submission synopsis compared

ASPECT	REGISTRATION SYNOPSIS	PRE-SUBMISSION SYNOPSIS
When	With your application for PhD registration	After the research is done, before the thesis
Tense	Future: what you will do	Past: what you did and found
Core sections	The nine parts in this guide	Abstract, objectives, gaps closed, contributions, conclusions, publications
It must show	The problem is worth a PhD and your plan can solve it	The work is complete and ready for examination

Names vary: some universities say "research proposal", "outline of research" or "pre-PhD synopsis". Your ordinance decides which document is due when.

What is the standard PhD synopsis format?

Almost every guideline asks for the same nine parts, in roughly this order, so the synopsis format for PhD registration looks much the same from one university to the next. Some add hypotheses, scope, a chapter scheme or the facilities you will use; one university guideline we reviewed lists 14 components.

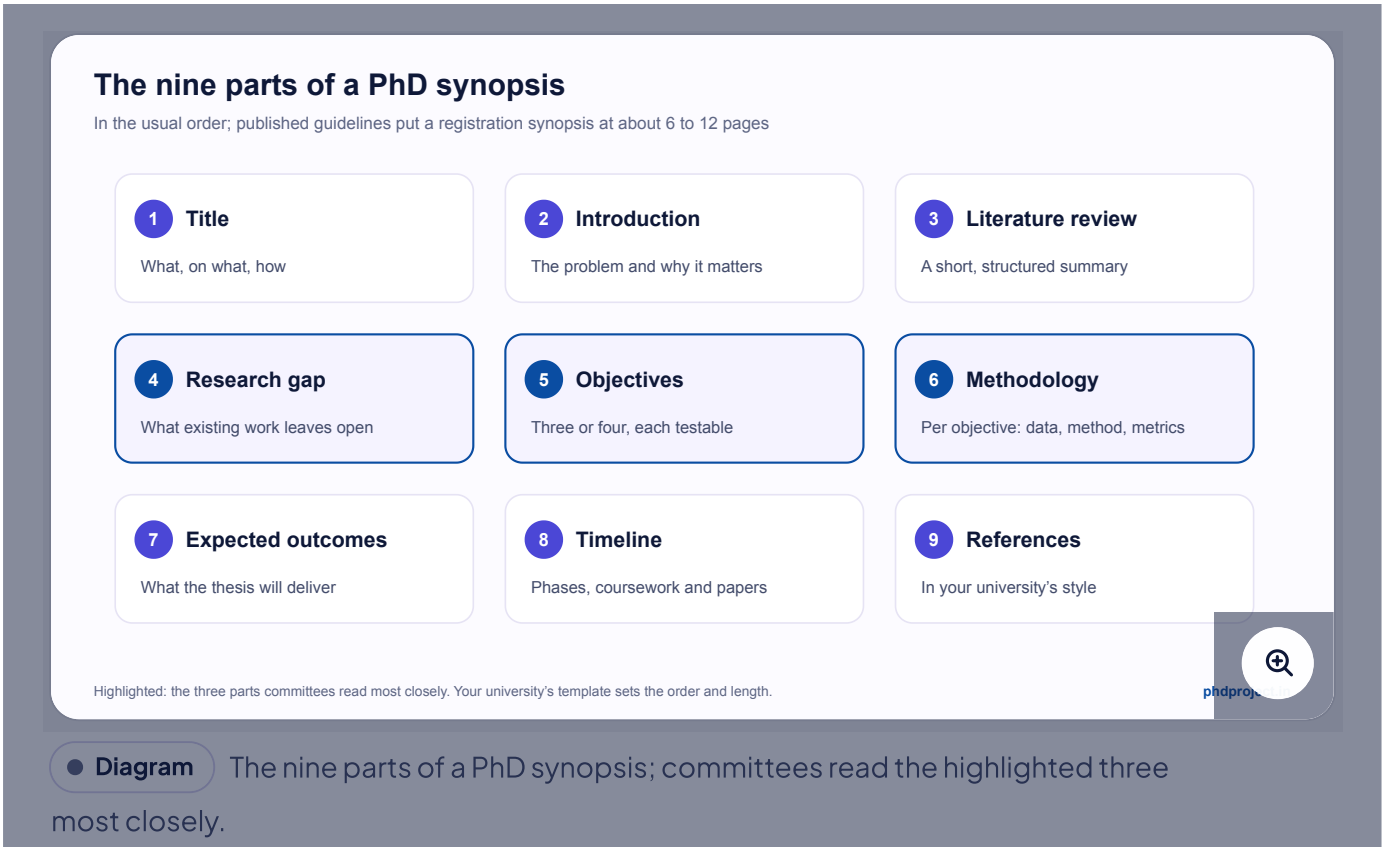


Diagram The nine parts of a PhD synopsis; committees read the highlighted three most closely.

A PhD synopsis has nine parts, in this order:

1. Title page with your topic, your details and your supervisor
2. Introduction and background to the area
3. Literature review summary
4. Research gap your work addresses
5. Objectives, usually three to five
6. Methodology: data, tools and how each objective is tested
7. Expected outcomes
8. Timeline for the remaining work

9. References in your university's style

The nine parts of a PhD synopsis

SECTION	WHAT IT MUST ANSWER	SUGGESTED LENGTH*
1. Title	Which problem, with which approach, in which setting? One specific line.	One line
2. Introduction	Why does the problem matter now, and to whom?	½–1 page
3. Literature review summary	What has been tried, grouped by approach and compared on method, data, results and limits?	2–3 pages
4. Research gap	What exactly is missing, with evidence from the review?	½ page
5. Objectives	What will you achieve? Three or four points, each one testable.	½ page
6. Methodology	For each objective: data, methods, baselines, metrics, tools and the order of work.	2–3 pages
7. Expected outcomes	What will each objective produce, and who benefits?	½ page
8. Timeline	Which phase happens in which months? Usually a Gantt chart.	½ page
9. References	Recent, peer-reviewed sources in one citation style.	1–2 pages

*Our suggestion for a synopsis of about 10 pages. Your university's guideline always overrides it.

How long is a PhD synopsis, and do university formats differ?

They differ a lot. The five published guidelines from Indian institutions summarised below range from 4 pages to 40, and each sets its own font, spacing and list of sections.

Synopsis rules in five published guidelines

GUIDELINE	STAGE	LENGTH	TEXT FORMAT	SECTIONS IT NAMES
BAMU, Aurangabad (2021)	Registration	1,500–3,000 words; 6–10 A4 pages	Times New Roman or Arial, 12 pt, 1.5 spacing	14 components, including hypotheses, chapter scheme and a phase-wise plan of work

GUIDELINE	STAGE	LENGTH	TEXT FORMAT	SECTIONS IT NAMES
BITS Pilani (2012)	After the qualifying exam	About 10–12 pages at 1.5 spacing, plus a one-page summary	Times New Roman, 12 pt, 1-inch margins	Objectives (3–4 points), background with a 1,500–2,000-word literature review, phase-wise method, bar-chart work plan
IIT Madras (2021)	Before thesis submission	4–6 pages, excluding the cover	12 pt, single spacing; references in 10 pt	Abstract, objectives, gaps bridged, main contribution, conclusions, publications
IGDTUW, Delhi	Before thesis submission	About 8–10 pages	Times New Roman, 12 pt, double spacing	Introduction with chapter plan, objectives, methodology, conclusion, references
Chandigarh University (2025)	For the external synopsis viva	Up to 40 pages, including preliminary pages	Times New Roman, 12 pt, 1.5 spacing	Abstract (up to 1,000 words), chapters, possible outcomes, references, publications

Summarised on 2026-09-29 from each institution's public document, linked in the first column. We are not affiliated with any of them. Always use the current version from your own university.

A pre-submission synopsis often comes with conditions too. IIT Madras, for example, lists at least one paper published or accepted in a refereed journal among its requirements for PhD synopsis submission. If your university asks for a paper too, check which journals it accepts now that the UGC CARE journals list has been discontinued. So get your department's template and rules before you write a word, and write to the length it sets. A longer synopsis is not a stronger one.

Drafting your synopsis?

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How do you write a synopsis for PhD, step by step?

Write the parts in a different order from the one they appear in. The gap and objectives come first, because everything else depends on them.

1

Get the rules and the template

Download your university's current synopsis guideline and cover-page format, and ask your supervisor which citation style the department uses.

2

Build a literature matrix

Put recent papers in one table: problem, method, dataset, result and limitation. The gap usually shows up in the limitation column. Search Shodhgangotri, INFLIBNET's repository of approved synopses, to see whether a similar topic is already registered.

3

Write the gap and the objectives

State the gap in one or two sentences, then write three or four objectives that each close part of it and can be tested.

4

Plan the method, objective by objective

For each objective, name the data, the method, the baseline you will compare against and the metric that decides success.

5

Draw the timeline

Lay the phases out month by month, with room for coursework, papers and thesis writing. The UGC regulations set a minimum of three years including coursework and a maximum of six, which re-registration can extend by up to two years.

6

Write the rest, then check it

Write the introduction and literature summary last, format every reference in one style, run a similarity check and get your supervisor's sign-off.

What makes a research gap convincing?

A gap names a specific shortfall and points to evidence the committee can check. “No one has applied deep learning to this problem” is weak. “Most detectors reviewed in Section 3 are trained on pooled traffic, and none report results when each gateway sees a different mix of attacks” is a gap: it is specific, and your own review backs it.

How do you write objectives that can be tested?

Start each objective with a verb whose result you can check: design, develop, compare, evaluate, deploy. Avoid “to study” and “to understand”, which never finish.

- **Weak:** To study federated learning for IoT security.
- **Testable:** To compare federated and centralised training of an intrusion detector on two public IoT datasets, using macro-F1 and false-alarm rate.

How do you prepare the PhD synopsis presentation?

Many universities also ask you to present the synopsis to a departmental or research advisory committee. Build the slides from the same nine parts: one slide each for the problem, the literature summary, the gap, the objectives, the method and the timeline, then a closing slide listing what each objective will produce. Keep the gap and objectives slides word for word as they appear in the written synopsis, and follow any time limit your department sets.

What does a PhD synopsis sample outline look like?

An illustrative outline, not a real synopsis

The topic below is a neutral computer science idea written for this guide. It is not a student's synopsis or work we delivered; it shows how the nine parts connect. For other areas, each written as a research question, see our PhD topics in computer science.

- **Title:** Privacy-preserving intrusion detection for IoT networks using federated learning on non-identical gateway data.
- **Introduction:** IoT traffic is spread across many gateways. Sending raw traffic to one server raises privacy and bandwidth problems; federated learning trains one shared model without moving the raw data.
- **Literature review summary:** three groups of work, compared in one table on dataset, data split, macro-F1, model size and whether uneven (non-IID) gateway data is tested: classical machine learning detectors, deep models on flow features, and federated detectors.
- **Research gap** (as the review might find): federated detectors evaluated mostly on evenly split data, with little measurement of their cost on gateway hardware.
- **Objectives:** (1) set centralised baselines on two public datasets; (2) design a federated training scheme for uneven gateway data and compare it with FedAvg and FedProx; (3) compress the model and measure its latency and memory on a Raspberry Pi-class board; (4) test how well it transfers between the two datasets on shared flow features.
- **Methodology:** CICIoT2023 from the Canadian Institute for Cybersecurity and TON_IoT from UNSW Canberra, both public; gateways simulated by splitting data unevenly by attack type; Random Forest, XGBoost and a 1D-CNN as centralised baselines; macro-F1, per-class recall, false-alarm rate, communication rounds, model size and latency as metrics; Python, PyTorch and the Flower federated learning framework.

- **Expected outcomes:** a benchmark of centralised and federated detection under uneven data, a compressed detector with measured edge cost, two journal or conference papers, and released code.

Illustrative 36-month work plan for the outline above

MONTHS	WORK	OBJECTIVE
1–6	Coursework, literature matrix, synopsis approval	Groundwork
7–12	Datasets, gateway splits, centralised baselines	O1
13–22	Federated scheme, comparison with FedAvg and FedProx, first paper	O2
23–28	Compression, edge measurements, cross-dataset tests	O3, O4
29–33	Second paper, pre-submission presentation	All
34–36	Thesis writing and submission	All

References (in IEEE style, the kind of list the outline would end with):

1. H. B. McMahan, E. Moore, D. Ramage, S. Hampson, and B. Agüera y Arcas, "Communication-efficient learning of deep networks from decentralized data," in *Proc. AISTATS*, 2017, pp. 1273–1282.
2. T. Li, A. K. Sahu, M. Zaheer, M. Sanjabi, A. Talwalkar, and V. Smith, "Federated optimization in heterogeneous networks," in *Proc. MLSys*, 2020, pp. 429–450.
3. E. C. P. Neto, S. Dadkhah, R. Ferreira, A. Zohourian, R. Lu, and A. A. Ghorbani, "CICIoT2023: A real-time dataset and benchmark for large-scale attacks in IoT environment," *Sensors*, vol. 23, no. 13, 2023, Art. no. 5941.
4. A. Alsaedi, N. Moustafa, Z. Tari, A. Mahmood, and A. Anwar, "TON_IoT telemetry dataset: A new generation dataset of IoT and IIoT for data-driven intrusion detection systems," *IEEE Access*, vol. 8, pp. 165130–165150, 2020.

Want a topic of your own at this level of detail? Our stage-by-stage PhD guidance covers topic selection, the literature matrix and the synopsis. For an M.Tech Stage-I synopsis, the Stage-I dissertation on predictive maintenance shows the same building blocks at master's level.

What are the most common mistakes in a PhD synopsis?

- **A review that lists papers one by one.** Group them by approach, compare them, and end with the gap.
- **A vague gap** such as “more research is needed”, which the committee cannot check.
- **Objectives that are activities** (“to study”, “to survey”) instead of results you can test.
- **A method with no dataset, baseline or metric**, so nobody can tell what success looks like.
- **Ten years of work in a three-year plan.** The timeline gives it away.
- **Weak references:** preprints cited as if peer-reviewed, or journals that are not indexed. See how to check if a journal is Scopus indexed and how to spot a predatory journal before you cite it.
- **Copied sentences.** The UGC’s 2018 plagiarism regulations grade similarity in theses and dissertations from Level 0 (up to 10%, no penalty) to Level 3 (above 60%), and leave references, the bibliography and properly quoted text out of the count. Ask what limit your university applies to the synopsis.
- **Ignoring the template.** A wrong cover page, font or margin is the easiest reason to be sent back.

Your synopsis, your name

A synopsis carries your name and your supervisor’s signature. Use guidance to sharpen the gap, the method and the plan, but make sure you can explain every line, cite every source and follow your university’s rules.

Frequently asked questions

What is the format of a PhD synopsis?

Most universities expect nine parts: title, introduction, literature review summary, research gap, objectives, methodology, expected outcomes, timeline and references. Fonts, spacing, the cover page and any extra sections come from your university's own guideline.

How many pages should a PhD synopsis be?

It depends on the university. Published guidelines range from 4 to 6 pages (IIT Madras, pre-submission) and 6 to 10 A4 pages (BAMU, registration) up to 40 pages (Chandigarh University). Write to the length your own guideline sets.

Is a PhD synopsis the same as a research proposal?

At registration, usually yes: the UGC's 2022 PhD regulations call it a research proposal, and many universities call it a synopsis. Some universities also use "synopsis" for a summary of finished work submitted before the thesis, so check which one is due. If you are still applying, see our guide to the research proposal for PhD admission.

What is the difference between a PhD synopsis and an abstract?

An abstract is a short summary of finished work, usually one paragraph or a page, placed at the front of a thesis or paper. A registration synopsis is a plan written before the research, with the gap, objectives, method and timeline. A pre-submission synopsis is longer than an abstract and summarises each chapter of the finished thesis.

How many objectives should a PhD synopsis have?

Three or four is common; BITS Pilani's proposal guideline, for example, asks for objectives as 3 to 4 points. Each objective should close part of the gap and be

testable with a named dataset, method and metric.

Can I change my topic after the synopsis is approved?

Small changes are usually possible with your committee's approval, and at some universities, BITS Pilani among them, the exact thesis title is approved only near submission. A bigger change goes back to your Research Advisory Committee, so check your university's ordinance.

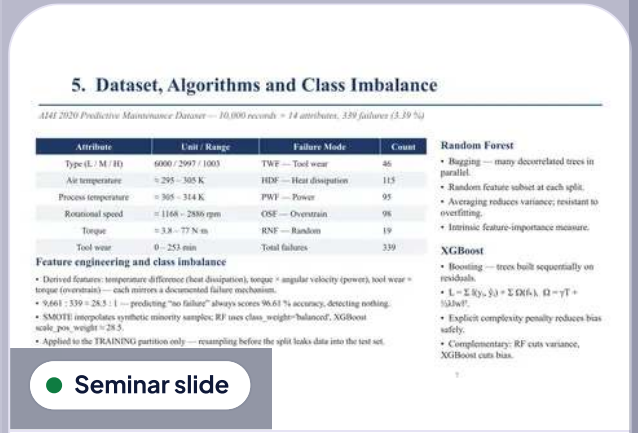
Can someone help me write my PhD synopsis?

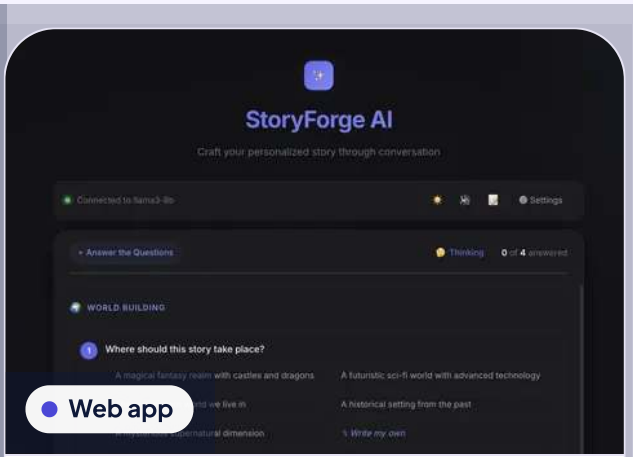
Guidance is common and useful: help with narrowing the topic, building the literature matrix, sharpening the gap and planning the method. The synopsis must still be yours to explain and defend, with every source cited and your university's rules followed.

DELIVERED WORK

The same building blocks, from delivered M.Tech work

Not PhD synopses: M.Tech and M.E. projects with a Stage-I report, a comparison with existing systems and a measured baseline. Shown with names and institute details removed.





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