

Research Plan & CAT Guidelines

¶ For students supervised by LOS, the CAT, a two-year progress evaluation, and the Research Plan are important steps in the thesis preparation and on the path toward the PhD. At the time of the CAT, a clear research direction must have been identified, and an independent research project, clearly outlined in the Research Plan, is now well underway or designed to be implemented.

¶ The goal of this document is to guide the Ph.D. student in the preparation of the relevant documents for the CAT but foremost to guide the student in the structuring of the Research Plan. This should be presented to the CAT, but its preparation should start as the Ph.D. research project starts to be defined/sharpens-up, and submitted/presented to an informal internal committee after the 1st year of the PhD i.e. one year before the CAT, and then updated up to the CAT presentation.

¶ This document will be revised to include additional information that might be relevant to support the Ph.D. students during their planning/ organization work.

¶ The structure of the Research Plan follows very closely the "Project Initiation Plan" of the Mathematical, Physical and Life Sciences Division at the University of Oxford. It will be provided to all the Ph.D. students working with LOS as soon as they start the Ph.D. This is an internal document from LOS/GoLP and should not be distributed.

¶ Completing a Ph.D. thesis on time, and to the best of your abilities, requires the completion of multiple, interrelated activities, and multiple deadlines. You will also need to be able to respond dynamically to any additional challenges you might face along the way.

¶ Having a clear plan for your research project will help you to develop a clear sense of direction, and to support you in organizing, planning, and monitoring your project.

¶ The CAT and the guidelines for the Research Plan (RP) are designed to help you to think about a range of factors that might have an impact on the progress of your thesis. You may find it difficult to complete some of the sections of the Research Plan. However, you can use the gaps to help you identify where you need to begin work and can review and update your plan/timetable at useful intervals making any necessary adjustments according to the experiences gained during your research.

Research Plan & CAT Guidelines

Documents The documents to be submitted/prepared for the CAT are:

- 20-minute presentation, summarizing the research work and the re-search plan, following the GoLP template; special care must be given to the preparation of the presentation as this will be the foremost source of information for the CAT committee;
- updated CV; the CV should follow a standard model, such as the ERC CV model, including publication list;
- manuscripts prepared and/or submitted for publication (at least one paper);
- the Research Plan (RP), according to what is described in the next section.

The Research Plan The Research Plan aims to help you structure the work for your Ph.D. thesis, and to think critically about the next steps in your Ph.D.

¶ The Research Plan should be a living document that you will start to pre-prepare early in your Ph.D. thesis, submit to the supervisor after the 1st year of your PhD, and that you will revise as needed. The Research Plan must include the following sections:

§{1} RP Research Topic Formulate a clearly defined and delineated research topic. The more clearly your research topic is defined, the better. This will give you confidence and clarity in what you are trying to achieve, and will allow you to monitor your progress more effectively.

Think realistically about the practical implications of your choice, in terms of the time required; necessary traveling/fieldwork; access to equipment or room/lab space; possible costs etc.

You should choose an area that you find particularly interesting since your interest in the subject is going to be vital in sustaining your engagement, and where you will have access to reliable resources, and appropriate supervision.

§{2} RP Research Question/Problem Once you have defined your topic you need to refine it and turn it into something that is focused enough to guide your project. Try describing it as a research problem that sets out the issue you are investigating, your

Research Plan & CAT Guidelines

argument (what you want to prove, disprove or explore) and the limits of your research i.e. what you are not going to be investigating. This will ensure your project keeps going in the right direction. What skill(s) would you like to develop?

Make sure your objectives are ‘SMART’ – specific, measurable, advantageous, realistic, and time-limited.

You should also be willing to revise your research problem as you find out more about your topic.

§{3} RP Research Methodology/Methods Think about the way in which you will conduct your research. Is your research going to be experimental, observational, theoretical, textual, qualitative, quantitative, etc.? Are there ethical considerations – specific protocols, procedures, and approaches to follow? Think about why you intend to conduct your chosen research/topic, what insights might it yield, and any difficulties might it pose.

§{4} RP Skills/Resources/Equipment required What equipment will you need to complete your project? Are you dependent on anyone else to complete your project? What will you do if they are unable to help? What other skills and resources will you require e.g. statistical analyses, laboratory methods, improved writing skills or computer software etc.?

§{5} RP Conduct of tasks/research This is the practical activity of collecting raw information/data or developing methods or theory, building new experimental equipment or technology, etc. Think about where this might take place; e.g. in a laboratory, library, at a computer, on the streets, or in the field. Will you need to attend any conferences, or spend time off-site with an industry? Are some tasks dependent on the completion of other tasks? Which tasks are most important, and why? Which are most time-consuming? Which are most difficult and why? What are the responsibilities of the supervisor or other individuals associated with the project?

Produce a draft timetable of the different tasks you intend to take and the estimated duration. Always include time for ‘delays’ e.g. holidays and emergencies such as family or personal crises etc. Consider how you are going to store and retrieve your data. Be aware of any key milestones you need to apply for and achieve, and the relevant timescales/ requirements.

§{6} RP Costs associated with tasks/research Estimate any costs associated with each task, and any other expenses needed to complete the project e.g. travel costs for fieldwork, etc. You should ensure that you have sufficient funds or funding

Research Plan & CAT Guidelines

sources to be able to complete your project within your funded period.

§{7} RP Risk Assessment/Limitations Think about what factors might threaten the successful completion of tasks? How can you minimize or eliminate such impediments to progress?

If you do encounter any problems during your research always consult with your supervisor(s) at an early stage to analyze and discuss if and how they can be resolved. If necessary look at modifying/refining your research.

Keep a record of every problem you encounter, and successfully solve, as this is useful information in writing up your research, as you can show your examiners how you overcame them.

§{8} RP Training and Professional Development Identify any general and project-related courses/training to attend (research, academic and generic transferable skills)? Do you have any specific personal career goals/options you would like to develop/pursue?

§{9} RP Teaching Opportunities Would you like the opportunity to gain teaching experience? The opportunity to teach whilst a graduate student is a valuable one and should be considered a useful skill to be acquired as a part of graduate study. The most useful type of teaching, from this perspective, involves student contact through involvement in class or tutorial teaching, or laboratory demonstration. However, teaching is potentially very time-consuming and can significantly interfere with the progress of a research project. Any proposal to take on a significant amount of teaching, for either a College or Department, should be discussed with your supervisor in advance, and he or she should be able to request that the arrangement should cease if in his or her judgment it is interfering significantly with research progress.

§{10} RP Planned Publications A list of planned or published publications should be listed, including tentative list of authors and outlets. This list of publications should then be connected with the thesis outline.

§{11} RP Reference/Literature Review Provide a list of publications that have resulted from a literature review by looking at material that has already been published, either in hard copy or electronically, that may be relevant for your research project, organized by the main topics of your Ph.D. thesis. You will need to be able to demonstrate the rationale for your research and to describe how it fits within the wider research context in your area.

Research Plan & CAT Guidelines

§{12} RP Transition from research to writing up When will you stop researching and start writing up? How much time you will need for writing up and editing? Allow sufficient time for your supervisor to review your work. // Always aim to stick to your plan, unless you have a clear reason why you need to continue your research longer. // Include breaks in your research timetable so that you can review and reflect on the work you have achieved, and then assess whether you need to do more research. // Remember to be realistic about your goals. You will not be able to achieve everything in your thesis. Having a section where you discuss 'Further Work' at the end of your thesis will allow you to outline any ideas for further, relevant research, and will show your examiners that you have thought about the implications your work has for the academic community.

§{13} RP Data Management Describe how you plan to organize the data to be generated in your project, mechanisms for data organization/storage/distribution, in particular, data sets that will support manuscripts/papers and their distribution/update, according to the data policies in place at IST and/or GoLP or in the projects that fund the PhD.

§{14} RP Thesis Outline Prepare a tentative table of contents of your Ph.D. thesis, explicitly linking each chapter to planned or published publications or to specific components of the workplan i.e. literature review. This should help you keep track of the progress towards thesis completion.

Key points you may want to discuss or revive with your supervisor

- A timetable of meetings for you to stick to;
- A focus for your supervisions so you make the best use of the time e.g. 'setting a research problem', 'analyzing the data', etc.;
- Identifying what you can send to your supervisor in advance to form the basis of a discussion about progress with your supervisor before each meeting, e.g. your research plan, early results of your data collection, or draft papers/ chapters;
- Think about what action points you might agree to focus on before the next time you meet;
- Keep a record of what you decide in each supervision session.

Research Plan & CAT Guidelines

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