

Dissertation Proposal Outline

Purpose of the Dissertation Proposal

1. To show that the student understands the overall field, the major results and where they are trying to fit in
2. To show that the student has framed a problem that can be solved in a reasonable time period
3. To show that the student has sufficient understanding and research abilities to carry out the proposed research
4. To give confidence that the results of the research will be valid and useful to the community

Document Outline

1. Literature Review
 - a. Important results summary for general topic area
 - i. Identify overall organization of the field topics and their relationships
 - ii. Identify major contributors and their contributions in time order
 - b. Specific topic area summary
 - i. Major results for specific topic area in time order
 - ii. Identify major problem areas for topic area
 - iii. Summarize major research techniques used
2. Preliminary Investigation Work
 - a. Identify problem to be solved
 - i. Relate to the overall topic idea
 - ii. Provide as much detail as can be done at this stage to specify the problem
 - iii. Why is the problem an important one to be solved and what might be the potential impact of the solution
 - b. Explain how you have validated problem approach and methodology
 - i. What previous theoretical work have you duplicated via simulations or analysis, etc.
 - ii. What previous investigations have you duplicated via analysis, simulations, etc.
 - c. Discuss any preliminary results developed and/or publications generated
 - i. Show simulations, data collected, analysis work, etc.
 - ii. If you are attempting a novel solution to a known problem, explain how it is novel and why it is expected to be substantially better than previous solutions
3. Proposed Investigation
 - a. Summarize Problem

- i. Outline the problem to be investigated
 - ii. Provide one or more testable hypotheses that will be investigated by the work
 - b. Proposed solution methodology
 - i. Justify techniques to be used and why they are appropriate to the problem
 - ii. If possible, explain why alternate techniques might not be able to provide a solution or are inadequate
 - c. Experiments
 - i. Explain experiment design methodology (how the measurements will be made and how the measurements that are made will be used to test the experimental hypothesis)
 - ii. What statistical measures will be applied to the data to produce confidence intervals and related statistical measures
 - d. Outline expected results
 - i. Specify what the work product will include (simulations, models, confidence levels, etc. as appropriate)
 - ii. Outline development schedule – approximate development steps and expected duration of each step
 - iii. Outline expected resource needs (computer time, equipment, sensors, etc.)
 - e. Outline how work will extend the field of knowledge and build upon existing results
4. Reference List
 - a. Typically 25 to 50 references covering 1, 2, and 3.