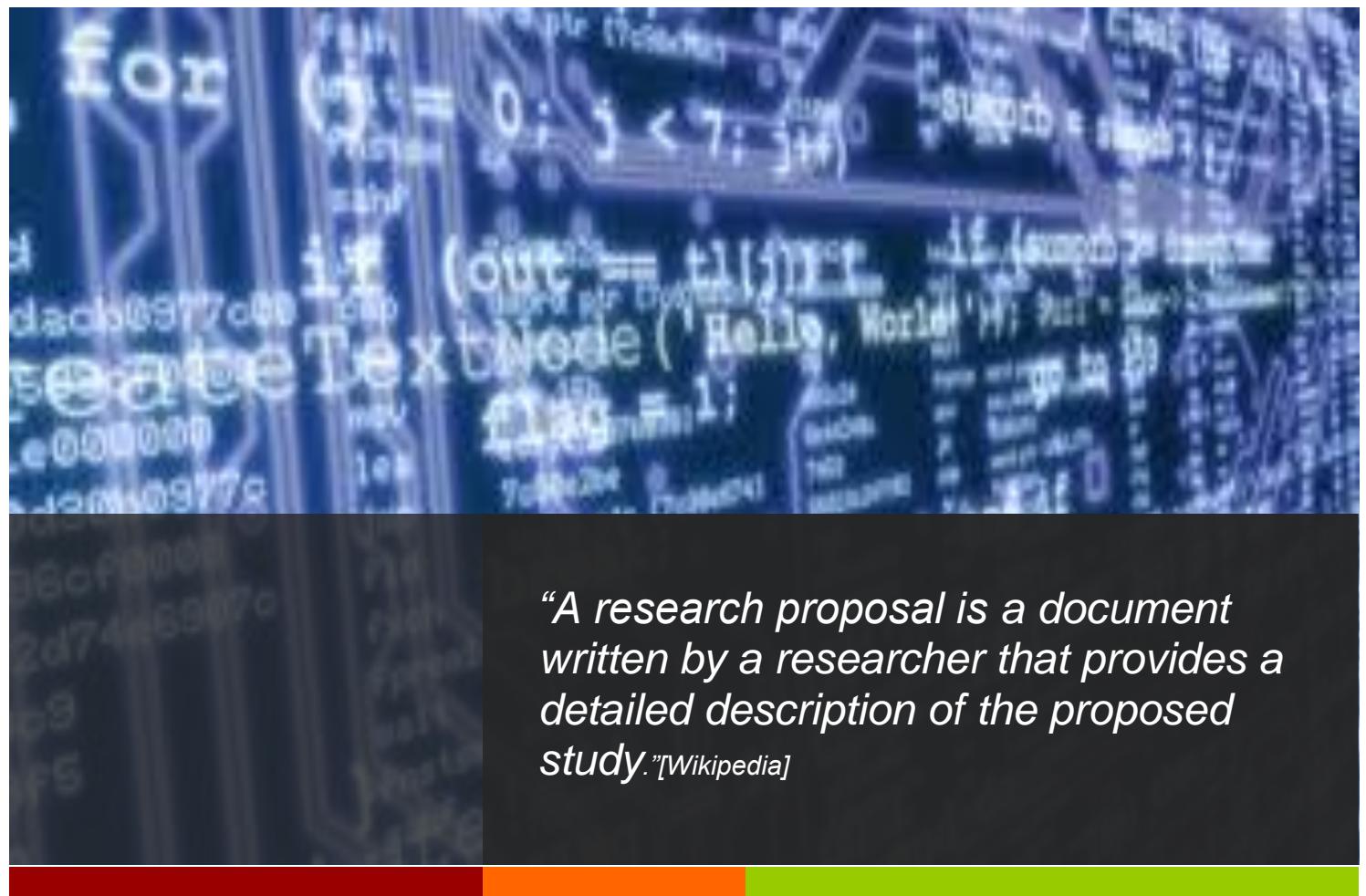


# CCIS Graduate Studies Guides

## Guide to Writing Your Research Proposal





*"A research proposal is a document written by a researcher that provides a detailed description of the proposed study." [Wikipedia]*

## What is a research proposal?

A research proposal is a an outline of your proposed project that is designed to

- Define a clear question and approach to answering it
- Highlight project originality and significance.
- Explain how the project adds to, or develops existing literature in the field.

A Good research proposal should provide evidence that your research is of value, that you are capable of conducting this research, and that the way in which you have chosen to study the subject is sound and ethical.



*Regardless of your research area and the methodology you choose, all research proposals must address the following questions: What you plan to accomplish, why you want to do it and how you are going to do it.*

*A research proposal is intended to convince others that you have a worthwhile research project and that you have the competence and the work-plan to complete it.*

### **Elements of a Research Proposal**

**Abstract:** Suppose that you were to meet a person at an official scientific gathering and that he/she would be willing to listen to you for no more than two minutes. Think about what you would say to that person and the style you would adopt in those two demanding minutes, this is what you should put in your abstract. It is important to keep your abstract concise and objective,

**Introduction:** The introduction advocates for the need for your project and gives a clear insight into your intentions. It presents a background and context for your study. If your introduction gets your audience's attention, they will stay with you throughout your proposal. How to frame the research problem is perhaps the biggest problem in proposal writing.

**Overview:** Background and context are extremely important for introducing the field you will be studying. It is important that you describe the area you will be researching, why is it important, what are the "hot topics" in the field, and describe the specific area you will be researching. The background may include historical, and or theoretical information about the context of the research.

*The difference between the research problem and research question is that the problem is broader, while the research question represents the “one question that you will answer at the end of your dissertation”.*

**Literature Review:** Research proposals contain extensive literature reviews and must offer convincing support of need for the research study being proposed. The proposal must be accepted by the supervisor, the department graduate studies committee, and the college graduate studies committee before you start your research work.

**Methodology:** In addition to providing rationale for the proposed research, the proposal must describe a detailed methodology for conducting the research--a methodology consistent with requirements of research in the academic field of computer science. Research methodology should relate to the nature of the scientific method used.

### **Problem Statement**

This section states the problem that you are exploring. The research statement is *specific, concise, and clear*. Answer the question: “What is the gap that needs to be filled?” and/or “What is the problem that needs to be solved?” State the problem clearly early in a paragraph. Limit the variables you address in stating your problem.

**Goals and Objectives:** **Goals** describe what you want to achieve. **Objectives** describe **how** you are going to achieve the goal(s). Objectives should be S.M.A.R.T.: specific, measurable, achievable, realistic, and time constrained.

**Contribution:** How will your research contribute to knowledge in the field? You should make clear what it is that your research will do that has not been done before, i.e. the original contribution of your research, and why this research should be done, its impact or value.

**Time plan:** You want to be sure that your project is feasible for the timeframe that you have. In order to do this, you need to map out what you will do and when you will do it. This may take the form of a chart, timeline or flowchart.

- Make sure that your research question is clearly stated, and addresses a demonstrable gap in the existing literature;
- Ensure that the research proposal demonstrates an understanding of research methods and research approaches and is it clear that the research methods identified are appropriate to the research question identified;
- Make sure that your passion for the subject matter shines through in the structure and arguments presented within your proposal.

*Being involved in research will help you be part of the research community, and develop research skills as well as invaluable transferable skills which you can apply to*

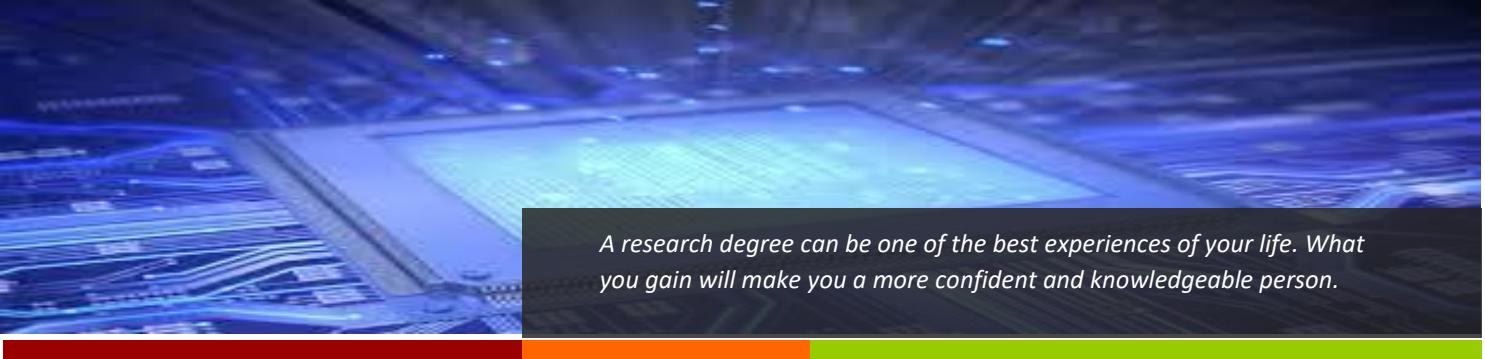
*Your overall aim is to produce a research proposal that is clear and coherent in every respect. It is important that the proposed research is realistic and feasible so that the outcomes can be achieved within the scale of a typical research degree program.*

### Remember

- The research proposal is an opportunity for you to communicate your passion in the subject area and to make a persuasive argument about what your project can accomplish. Although the proposal should include an outline, it should also be approached as a persuasive essay – that is, as an opportunity to establish the attention of readers and convince them of the importance of your project.
- The quality of your research proposal depends not only on the quality of your proposed project, but also on the quality of your proposal writing. A good research project may run the risk of rejection simply because the proposal is poorly written. Therefore, it pays if your writing is coherent, clear and compelling.

It is of high importance for the student to know the different steps through which the proposal will go through will be of great value to the student such as:

- Prepare the proposal
- Your supervisor should review it and approve it
- Submit to the department graduate studies committee which should give their feedback
- Review the proposal in light of the feedback and then re-submit it for final approval
- Once the proposal has been approved by the department graduate studies committee then you should upload it online at (<http:// ....>) and submit it to the department council for approval
- The department then will submit it to the college graduate studies committee
- If the college graduate studies committee requests any updates for your proposal then you should modify your proposal and upload it again in online.



A research degree can be one of the best experiences of your life. What you gain will make you a more confident and knowledgeable person.

*Research relevance: It is important that you relate your research to the specialty of your degree program (department). [ACM Computing Curricula]*



**Computer Engineering:** Computer Engineering is a discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. The field of Computer Engineering is solidly grounded in the theories and principles of computing, mathematics, science, and engineering and it applies these theories and principles to solve technical problems through the design of computing hardware, software, networks, and processes. Research in CE involves the design and optimization of both software and hardware components found in Computer Systems such as in computer architecture, computer networks, signal processing, control and robotics, and intelligent systems.



**Computer Science:** CS is the scientific discipline concerned with the fundamentals of computing. Computer science spans a wide range, from its theoretical and algorithmic foundations to developments in robotics, computer vision, intelligent systems, bioinformatics, and other areas. Research in CS includes finding effective ways to solve new computing problems, designing and implementing software, and devising new ways to use computers.



**Information Systems:** IS fulfills the computing, and especially information, needs of the business community. Information systems specialists focus on integrating information technology solutions and business processes to meet the information needs of businesses and other enterprises, enabling them to achieve their objectives in an effective, efficient way. Academic research in Information Systems has taken two different approaches: behavioral (management oriented) research and constructivist (build-evaluate) research.



**Information Technology:** IT as an academic discipline characterized as “the most integrative of the computing disciplines”[2] . Research in IT may include development, building, implementation, integration and other such terms that indicate delivery of a system into a context. It may also include technology evaluation, measurement and testing which address the application of a particular technology in a context. [3]

More on research in IT can be found in [4], [5] and [3].



**Software Engineering:** SE is the discipline of developing and maintaining software systems that behave reliably and efficiently, are affordable to develop and maintain, and satisfy all the requirements that customers have defined for them. Research in SE includes software reliability and maintenance and focus more on techniques for developing and maintaining software that is correct from its inception.



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