# Handbook for How to Write a Project Proposal
# Detailed Table of Contents

# Chapter 1: Why a Project Proposal?

Writing a good proposal is a very important tool for organizing time and resources to complete a project which fully realizes your objectives. Whether the proposal is done as a PQP for credit separate from the one-unit project, or as the first fraction of credit towards the one-unit requirement, a project proposal will be invaluable in structuring your ideas about carrying out your research and writing your conclusions. Some faculty use it as an informal "Contract" to establish an agreement about the content and limits of the final project report. Also, since the project proposal is a widely used communications tool in the professional world, you will have the advantage of learning what goes into a proposal as part of your undergraduate education.

At WPI, only those students who present budgets *in conjunction with a project proposal* will be considered for funding toward IQP expenses. Students should consult with their advisors in framing a proposal and a budget, and some modification of these guidelines may be needed to accommodate your subject. But since money for your proposed budgets will be allocated competitively, be sure to cover the basic points outlined here.

Requests for funding toward *MQP expenses* should be presented to the individual departments.

# Chapter 2: Basic Sections of a Proposal

In addition to specifying the needed allocation of resources to complete the project, proposals have three major sections:

1. Introduction
2. Literature Review (or Background)
3. Procedure (or Methodology)
4. Budget

The "Introduction" tells the reader 1) what your project is about, 2) why the project is worth doing, and 3) why your project is a good topic for fulfilling the objectives of the degree requirement (See page 4 for more details). The Introduction must also state clearly and completely the specific objectives of your project -- in some detail, what you intend to accomplish. Though the reader encounters it first, you probably should write the "Introduction" last since you will need to have mastered the other parts of the proposal to provide an effective "Introduction." The "Literature Review" tells your audience (your advisors, off-campus sponsors, or sources of funding) what the state if the art in your topic is (See page 5 for more details). You probably should tackle the "Literature Review" first since mastering it will give you the background you need to write other sections. The "Procedure" (also called Methodology) lays out the method you have selected to conduct your research (See page 5 for more details). If you will be doing an IQP, the "Procedure" should emphasize how the particular interactions between science, technology, and society will be analyzed. If you will be doing an MQP, the "Procedure" should emphasize how your research will allow you to complete your project successfully.

A good Project proposal has an additional advantage; with appropriate revisions, the chapters in the proposal can give you a start on similar sections for the final report. Good work on the proposal has two advantages: planning for effective resource use when doing the project, and getting a jump ahead on the final report.

We suggest you write the three sections of the proposal in this logical sequence: Literature Review, Procedure, Introduction. These guidelines will thus follow that order. Other material which should go into the report, and will be discussed in the following pages, are the

1. Abstract
2. Title Page
3. Table of Contents

4. Footnotes
5. Bibliography

## Introduction

The procedure or the methodology is the heart of the proposal because it must tell the reader how you propose to carry out your project. It must convince your advisor (or in industry your manager or potential client) that you clearly understand your task, have a logical time plan for solving your problems, and have identified all the resources you need.

If your proposal is for an IQP, you must take special care to explain HOW you plan to relate some aspect of science or technology to society. Note that "technology" need not be defined narrowly here: "technology" can mean the techniques used to manage or evaluate any resource efficiently, not just "nuts and bolts" hardware. But you must explain clearly how your procedure insures that the WPI IQP degree requirement will be satisfied by completing a project which defines, investigates, and reports on a topic relating science or technology to a social need or issue. In short, why is your topic an IQP?

Some of the other questions the reader will expect you to answer in this section are:

1. What are the tasks and sub-tasks identified to achieve your objectives?
2. What materials will you need to carry out your project: equipment? computer support? typing? graphics? others?
3. What data are needed for the project and how will they be collected? If the project requires a survey or interviews, the design of this instrument (especially the selection of participants) must be explained and justified.
4. What method or process will be used to analyze this data and where else (if anywhere) has this method or process been used?
5. What time frame do you think you will need to accomplish identified tasks or subtasks? Should schedules be presented in standard forms like PERT or Task Charts? (see Figures 1 and 2.)
6. If you are working on a team, which teammates will accomplish which sections?
7. What costs do you anticipate the project will incur -- in other words, your budget? (A Budget Summary Request Form must be submitted to the Interdisciplinary Studies Division Office as shown in Appendix 1 for IQP Proposals. A Budget summary for an MQP Proposal should be submitted to the individual department.)

## Literature Review (or Background)

To show your advisor that you know what your talking about concerning your project, you need to demonstrate that you know the background and context of your topic. Good questions to answer in this section are:

1. What kinds of research have been done before (including previous IQPs and MQPs which can be accessed through the reference desk at the library)?
2. What relevant kinds of studies or techniques need to be mastered to do your project?
3. Where is the state of the art today?
4. How have others gone about trying to solve problems you want to tackle, and in what ways will your approach build on and vary from previous work?

Think of the background section as the place where you identify and discuss the most important books, articles, or any other kind of source materials for your project. If you wanted to bring another student up to date on what you're doing, what would be the most important thing to read? A well written review will provide a sense of critical issues and debates which form the background for your own original work.

Everything in your literature review section should be mentioned in your bibliography, **BUT** not everything in the bibliography is important enough to be mentioned in the literature review (See page 9 for more details). In other words, this section is a comment on the most valuable material you have identified which you will need to assimilate to do your project. The literature review thus provides a guide to all material you list separately as footnotes or bibliography.

## Procedure

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## Appendix 1 (Budget)

The Budget Summary Request form on the last page should be copied and used to submit a budget request. Please note the following:
Under item 6, on a separate sheet break down your costs carefully by itemizing all anticipated expenses. Information supplied on actual costs (such as copies of list prices, estimates, and the like) is crucial in determining accuracy of anticipated expenses. The more information you can supply on such expenses as travel, labor, supplies and material, and so on, the better your proposed budget will be.

Travel expenses will be paid per term using the standard WPI travel expense form, signed by you and your advisor (who thus validates the accuracy of your travel costs.)

Current WPI policy states that students are expected to contribute $50 per person per 1/3 unit of IQP work toward any out of pocket expenses encountered. This means that each student is expected to pay $150.00 towards the completion of the IQP before asking for reimbursement of any kind. If you have a project team of 4 students, then the total contribution before being reimbursed is $600. If you anticipate that your expenses will exceed this expectation, then you must submit a budget for your project. Your project advisor must

approve this budget prior to submission of any expenses to the IGSD. (Commuting costs are not reimbursable.)

All telephone calls should be placed through the Projects Phone in the Project Center, Costs for calls to destinations within the continental U.S. thus should not appear on your budget, since the support is already available automatically. If you anticipate the need to make international calls, please document this request very carefully.

You are responsible for all costs normally associated with producing the final report which goes on file at the library, as well as for any copies you make for yourself. Do not apply for reimbursement of standard typing, laser printing, or xeroxing costs of your report. Others who want copies should pay for their copies.

Requests for support ALWAYS look better if you indicate that you have investigated all possible avenues, and have identified funding sources (off-campus agencies, research grants) in addition to what you are asking from the IGSD Office or your department.

Under Item 10, briefly describe your objectives and procedures (to enable the committee to weight your request relative to others.)

# Chapter 3: Other Sections: Finishing Up

Once you have these three main sections well along, several other sections coming at the beginning and the end should be drafted to provide the opening and closing expected in professional presentations. These sections are listed below and placed in the order they will occupy relative to the three main sections noted in parentheses:

- Title Page
- Abstract
- Table of Contents
- (Introduction)
- (Literature Review)
- (Procedure, including Budget)
- References -- Footnotes and Bibliography
- Appendices
- Other Parts

## Title Page

The title page should contain, neatly arranged, the following:

- title of the project
- project registration number of the project
- name(s) of the author(s)
- name of the faculty advisor(s)
- name of off-campus sponsor, if any
- date of submission

Additionally, the following statement should be included on the title pages of IQPs and MQPs: "This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review."

Figure 3 shows a sample title page.

## Abstract

The abstract should be a brief statement of the topic, procedure, and the projected outcome of the project, in three or four sentences. The abstract of the final report (which can be modified from the one in the proposal) is crucial since it goes on your transcript and is

circulated widely off-campus. (The final project report abstract should be about 80 words to accommodate the space on your transcript. You will want to make this as good as possible since project abstracts are a major source job interviewers use to formulate questions.)

A three-sentence abstract might well follow this order.

1. First sentence introduces the project topic, mentioning (if relevant) the off-campus agency with whom the project is being done.
2. Second sentence indicates what material will be examined and procedures employed to carry out the project.
3. Third sentence indicates the anticipated conclusions (or results, application, or real world use of the project). An example:

This proposal, prepared for the U.S. Small Business Administration in Washington, will describe Flexible Manufacturing Systems (FMS) and assess their impact on small businesses. Working from literature and interviews, we will describe FMS technology, its use in industry, and its impact on small businesses, especially suppliers. We will assess: 1) if FMS can be used in small businesses, 2) how FMS will impact on small businesses, and 3) if management techniques related to FMS will affect small businesses in the near future.

## Table of Contents

The table of contents lists (with final page numbers) the location of each separately titled section of the report, usually following the sequence above from abstract through appendices. To the professional reader (who as such is faced with lots of reading and appreciates conveniences), the table of contents also indicates at a glance what material is covered.

## References

References usually consist of footnotes and a bibliography. Footnotes may appear a) at the bottom of the page, b) at the end of the chapters, or c) at the end of the report but before the appendices. Footnotes usually cite appropriate sources of information (including interviews or verbal contributions from others) or occasionally indicate cross-reference to additional material. The form of the note varies with the professional area concerned, so check with your advisor. The standard for such matters is the latest edition of Kate Turabian's A Manual For Writers. Whatever the format, footnotes contain the name(s) of the author(s),

book or journal title, date of publication (usually with the place and publisher for books) and, for journals, the volume and page numbers.

The bibliography lists all materials cited in notes. Its value as a list of relevant materials often makes it useful to consult independent of the report itself (so be sure to check bibliographies in your sources for relevant materials.) Bibliographies are often used as the sole source for the full reference for footnotes; the footnotes very briefly cite the work in question (by author(s) and year, for example), leaving the full citation in the bibliography.

## Appendices

Appendices (singular, appendix) contain materials too lengthy for inclusion in the text, or not directly relevant. Certain kinds of raw data, background materials, and the like go here. ALL material in appendices must be referred to in the text so readers know why they are here.

## Other parts

Occasionally a proposal and more often a report will contain an *Executive Summary*. This section, which comes after the abstract, provides a succinct overview of each section of the entire document in five to ten pages. Executive summaries are required in professional reports, and at WPI, as a part of applying for the President's IQP Award.
A *Letter of Transmittal* is normally affixed before the title page if the proposal or report is being submitted to an off-campus liaison. This letter is in business-letter format, and tells the recipient briefly that you are submitting the attached proposal as part of an agreed-upon plan to conduct the project with the agency the liaison represents.