A SHORT GUIDE  
TO  
PROPOSAL PREPARATION  

For College of Engineering Faculty at  
Wayne State University  

by  

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INTRODUCTION

When faculty-members address the problem of obtaining research funding, they usually find themselves asking several questions:

1. To what agency or agencies should I submit my proposal?
2. What sort of things should I include in a proposal? Specifically, what does the funding agency require? What does the University require? Aside from what’s mandatory, what sort of things is it advisable to include?
3. How do I organize the different parts of a proposal?
4. How do I work up the budget?
5. How do I get the proposal approved by the University?
6. How do I maintain contact with the funding agency while my proposal is being reviewed?

This booklet is intended to help answer these questions. Obviously, there are many sorts of proposals, and many specific points which a general guide like this can’t address, but the type of proposal we have used here as a model for our discussion (essentially a basic research proposal) represents by far the most common type. In other words, the kinds of information modeled here are required in virtually all proposals, and the presentation of that information seldom varies significantly from the arrangement used in this guide.

The section entitled “Where to Submit Proposals” is a brief introduction to funding sources and to the various means of finding them.

The section entitled “The Proposal Team” gives advice on how to organize a large multi-investigator proposal.

The section entitled “Elements of a Successful Proposal” discusses the broad constituents of a good proposal, with emphasis on the reviewer’s point of view.

The section entitled “What Goes into a Proposal” is arranged in numbered sub-sections corresponding to the specific parts of a proposal, in the order in which they actually appear in the finished document. This arrangement is used to simplify our presentation, and to provide a kind of matrix for the final assembly of your proposal. In practice, of course, the composition of a good research proposal proceeds from the most important part, the project description, to other parts, such as the budget, the current support and pending applications, the attachments, the cover page, etc.

The section entitled “Proposal Prospect Enhancement” gives some ideas for improving the chances of your proposal’s success in the competitive modern environment.

The section entitled “The College and University Review Process” outlines the steps involved in getting your proposal approved and submitted by the University administration.

“The Post-Submission Period” summarizes the activities suitable during the often lengthy period while a proposal is under review by a funding agency.
The section on “Proposal Support Services” describes the College and University resources available to you for the preparation of proposals.

WHERE TO SUBMIT PROPOSALS

Hundreds of agencies are involved in supporting research and other kinds of projects. If we include every existing private, local, county, state, national, and international organization, and every grant, contract, or fellowship program, the number of current funding sources grows into the thousands. The fields of effort supported are correspondingly numerous. New funding sources are constantly being announced, while older ones change, split, decay, or pass out of existence. A particular funding source may be publicized broadly, or not at all; program guidelines can change abruptly, remain constant for decades, or vanish.

The field is broad, but not trackless. Generally speaking, the first, most obvious sources of funding for almost any kind of project are those administered by the Federal Government. All Federal agencies publish guides to their various programs of support; these are available online. An overall listing of most Federal programs can also be found in the Catalog of Federal Domestic Assistance. Program guidelines and regulations are announced in the Federal Register.

Non-Federal funding sources are legion. Besides the giants (e.g., the Ford, Rockefeller, MacArthur, and Hughes Foundations), there are scores of privately-endowed organizations providing support in various areas, some narrow, some broad. The most important of these can be found by searching online, and in such volumes as the Annual Register of Grant Support, the Directory of Research Grants, and The Grants Register. These are commercially-published directories of major funding sources; all are particularly convenient because they include Federal as well as non-Federal programs. Also available at Purdy Library is the Foundations Directory, a listing of private foundations only. These source-books are indexed in a variety of ways to make searching through them a fairly easy task.

The University’s Sponsored Program Administration (SPA) and the Office of University Development publish the “Grants and Contracts Prospectus,” which is mailed widely around campus and always contains the latest news and tips on sponsored projects.

In addition to the sources mentioned above, the Sponsored Programs Information Network (SPIN) is available to all Wayne State faculty. SPIN is an advanced computerized information resource established and maintained by the State University of New York. As a subscriber, Wayne State has access to a huge, continually updated store of information on all significant funding agencies, both public and private. SPA and the Office of University Development house all materials relating to SPIN. SPIN is now accessible online; call Vance Briceland at SPA (ext. 7-2294) for help.

Recent years have seen a growing emphasis on in-depth research into funding sources. Professional grantsmen stress the importance of learning as much as possible about a potential sponsor: its history, source of funds, and general personality. Compiling profiles
of funding agencies is certainly a worthwhile activity, especially for faculty planning innovative or unusual projects for which there are no obvious funding sources. Even in the sciences and engineering, areas of doubt exist which must be filled in by detailed study of a potential sponsor. However, investigators should be cautioned against spending too much time on this kind of preliminary research, as it can easily degenerate into fruitless attempts to second-guess a funding agency. In determining the appropriate agencies or offices within an agency to support your research, some detective work is very worthwhile. Every agency publishes lists and directories of prior grants and awards. It makes sense to look through these lists to determine if your own project fits. Personal contacts with colleagues, at WSU or elsewhere, can give you good ideas for appropriate funding sources. Department Chairs, Deans, and SPA receive requests for proposals frequently. If these people know of your research interests, they will pass these announcements on to you as they are received.

University researchers can approach any funding source confidently; interest in supporting campus-based projects remains high. In dealing with industry, College of Engineering faculty particularly enjoy a built-in competitive advantage over private research labs: low cost. This is due in part to the lower salaries paid in the public sector, but chiefly to the low overhead and low cost of services here at Wayne State. Allied with the high quality of faculty expertise, this makes Wayne Engineering a powerful competitor for research dollars. The message is simple: locate your potential sources of funding and go get ‘em!

Formal submission of a proposal to more than one agency is to be encouraged, if the agencies in question are appropriate. Of course, every proposal must include a list of the agencies to which it is being submitted; this requirement is discussed later.

An important point to remember in preparing any application is that funding agencies always require considerable lead-time in which to evaluate a proposal. Thus the proposed starting date for your project may have to be two, four, six, or even more months later than the date of submission of your application.

Deadlines are imposed on practically all grant programs. They must be observed in order to achieve success. You should ascertain the deadline for a given program at the earliest possible time, and work with it constantly in mind; try to give the Research Support Office and SPA as much lead-time as possible, and allow plenty of time for the final preparation and mailing of your proposal.

Finding sources of funding for a project can be a lengthy business, but it is usually fruitful. The College administration is always ready to help with the work of searching for and contacting granting agencies.

It may be worthwhile for you to visit a program officer at a funding agency in order to explain your work. Visits allow you to make your case, show your enthusiasm, and indicate your credibility. To support this important activity, money for trips to Washington and elsewhere is available from the Vice President for Research and from the Research Office in the College of Engineering.

College of Engineering faculty are in frequent contact with businesses, and usually conduct the initial discussions that lead to contract-supported projects. At some point in
these discussions the question of budgeting will come up. Engineers, be careful! A rough budget thrown together in a meeting with company officials may prove to be based on wrong assumptions or to omit essential items. Too often, Engineering faculty have committed themselves to bottom-line figures that are seriously low and inadequately cover costs such as student support, travel, equipment, supplies, and publication costs. Before you talk money with a prospective client, talk money with the Associate Dean or the Research Support Officer. Take twenty minutes or so to sketch out a realistic budget in consultation with one of these specialists; then walk into that meeting with Ford or Chrysler or General Dynamics armed with realistic figures.

THE PROPOSAL TEAM

The majority of university proposals are one-person efforts. However, some funding programs call for large, multi-disciplinary responses requiring input from several or many faculty. University-level program proposals are without exception team projects, and require coordinated effort by staff, academics, and administrators.

The key term here is coordinated effort. No matter how the work is organized, the proposal team must include two essential members: 1) a team leader who can oversee the writing of the proposal as a whole, and 2) a production editor who has responsibility for the formation of the actual proposal document. An unusually talented and experienced team leader might be able to combine these two functions, but the most efficient organization will treat them as separate and specialized jobs.

The project description of a large team proposal will be the work of several experts, each addressing a separate discipline or subdiscipline. If agency guidelines permit, these separately-written sections should be explicitly identified by author and department. This serves the purpose of giving credit where it is due, and of assisting reviewers in evaluating the proposal.

A point of vital importance, and one too frequently overlooked, is that all proposal team members must be fully informed, from the beginning, of program requirements and guidelines. This particularly includes the production editor, who is charged with the exacting task of perfecting the proposal document in all its details; he or she must know the history and progress of the proposal from its earliest stages in order to coordinate the separate parts of the document in an intelligent way. At large research institutions such as Wayne State, the production editor will be responsible for final budget preparation, and this work in particular requires complete familiarity with the proposed staffing plan and project description. Separate budgets for the different aspects of a large project will usually be required, together with a summary budget for the effort as a whole. Wayne Engineering faculty are fortunate in being able to draw on expert assistance from the Engineering Research Support Office during the budget preparation phase.

Deadlines are a more serious problem for team proposals than for individual proposals. As we all know from experience, committees take longer to finish their work than individuals, and time-to-completion increases in direct proportion to the size of the committee. The team leader must set an early deadline for receipt of copy from team members, and should attempt to limit the number of drafts as much as possible. Ideally, a
schedule, with timed phases, should be agreed upon at the beginning of the proposal project. At the same time, the production editor should work up and distribute a style sheet for team writers to follow from the outset; this will simplify the editing process enormously, and greatly shorten the time needed to bring the proposal to its final form.

Finally, still with deadlines in mind, never underestimate the purely physical challenge of producing, copying, binding, distributing — and reading! — a major proposal. A good procedure to follow in organizing a large proposal is to paginate the separate sections independently. This seemingly minor detail can be critically important during the final (and often hectic) days of proposal production: it allows the document to be broken into discrete parts for last-minute editing and correction. It will also ease the reviewers’ burden in finding their way through a complex proposal.

**ELEMENTS OF A SUCCESSFUL PROPOSAL**

Quite independently of the organization or agency to which you are planning to apply, there are three fundamental components of any successful proposal. First, the prospective investigator must make a convincing case in describing the nature of the research problem and the challenge and urgency of a solution. Second, the investigator must demonstrate that he has a practical, innovative, and believable program for carrying out the research effort. Finally, the prospective investigator must be able to market himself/herself as the best person to conduct the proposed research. The case must be made that the proposed research has every prospect for success.

1. **The Problem and the Challenge**

In terms of the first component of a successful proposal, a few appropriate sub-elements should be addressed. Begin with a discussion and review of prior and related work. The emphasis in this discussion should be on work within the last five to seven years. This discussion should incorporate an element of excitement; it should not be over-long, tedious, or pedantic. Because Wayne Stare is an educational institution, it is important to indicate clearly the importance of the field in general, and of the specific project in terms of both technology development and educational opportunities for faculty, graduate students, and undergraduates. Because the proposed work involves significant challenge, the extent of this challenge should be detailed. Finally, it is extremely important that the overall impact of a successful research program on the knowledge base be stated and explained.

2. **Plan of Work**

The plan of work component is that part of the proposal where the prospective investigator demonstrates his initiative, creativity, and genius.

The investigator must show his/her intellectual grasp of the research problem and present an innovative approach to a solution, clearly integrating the unique aspects of the proposed research philosophy and vision in an organized plan. If this section is mediocre, ordinary, obvious, or predictable, the chances for receipt of an award are substantially reduced. On the other hand, the most brilliant plan will be discredited if the investigator lacks the intellectual resources, facilities, apparatus, and people to carry out the proposed work plan.
A good plan of work incorporates goals, timelines, and interim benchmarks. Since most proposals involve plans for funding for more than one year, the plan should indicate what the principal investigator will accomplish by the end of each year of the grant. Obviously, in the early years of an award, the prospective accomplishments will be speculative, since they will depend on earlier achievements. It is difficult to predict what specific results will be achieved in the last year of a three- or five-year continuing grant, but at the outset of the research project the goals must be clear. The multi-year work plan must distinguish between definite accomplishments and speculative achievements, but excessive vagueness will always be considered a serious fault by the program officer and reviewers. The reviewers must feel that your effort is almost a sure thing, and not a shot in the dark. It is generally worthwhile to outline the division of labor between principal investigator, co-investigators, graduate students, and others.

3. Prospects and Expertise

As indicated earlier, the most brilliant plan of work will nor result in a grant if the reviewers seriously suspect that the prospective grantee cannot do the job. No one wants to make an investment in an enterprise that appears destined to failure. Because every proposal is a prospective investment in a speculative undertaking, the case for the credibility of the investigator must be as strong as possible. In addition to what appears in the investigator’s biographical sketch, the proposal should stress the prospective grantee’s skill, talent, prior accomplishments, concurrent relevant activities, experience, and access to resources.

Apart from selling your personal credibility, you must demonstrate clearly that you have the resources to do the research work in an efficient manner. Some detail must be provided with regard to equipment, computers, facilities, and support people. If any of these items is deficient, you will have to indicate how you plan to deal with the situation. A half-hearted or ambiguous response on this issue will undermine your credibility and your chances for a grant.

In summary, the question to answer is, “Why is this investigator at Wayne State the best person in the world to do this job?”

WHAT GOES INTO A PROPOSAL

Many Engineering faculty are familiar with proposals in business and industry. Academic research proposals are similar to these, but differ in that 1) they are usually shorter and simpler, and 2) they are seldom part of any larger campaign of meetings or presentations aimed at selling a project. An academic research program normally wins support from a sponsor on the strength of this single document. For this reason, proposals must be prepared with meticulous care.

1. The Cover Page
By “cover page” we mean simply the topmost page of the proposal. It is an integral part of the proposal, first because of the information it carries, and second because it bears the signatures that are required to make the proposal a formal, certified document.

The sample cover page shown in Exhibit 1 displays the basic format employed by Wayne State University for almost all proposals. (Some agencies, of course, issue printed forms for proposals; these should be used whenever they are required.) This format has the virtues of 1) simplicity and 2) flexibility: simplicity in that it presents only what information is needed, in plain, easily-read form on ordinary paper; flexibility in that items can be inserted or deleted as necessary without disrupting the basic pattern.

Several things should be noted regarding the cover page:

• The name of the funding agency is given in its complete, official form. Sometimes, additional information (e.g., the name of an office or person within the funding agency) is included in this space.

• There may be more than one Principal Investigator. In this case, the designation Co-Principal Investigator is adopted for each person, and the same information provided for each. One Co-Principal Investigator should also be designated Correspondent; this will facilitate later communication with the funding agency.

• The University’s authorizing official must be designated in full.
EXHIBIT 1: MODEL COVER PAGE

[Department or College letterhead]

Date: 12/3/99

Research Proposal to: National Research Foundation
9999 Center Drive
Anytown MI 40000

Title: VIBRATIONAL MULTIPLEXING ALGORITHMS

Status: New proposal

Proposed Starting Date and Period: December 1, 2001; 24 months

Amount Requested: $ 262,277

Submitted by:

___________________________
Dr. John E. Doe, Professor
Department of Electrical and Computer Engineering
313/577-3000
jedoe@ece.eng.wayne.edu

Approved by
Institution:

___________________________
Daniel J. Graf, Director
Office of Research and Sponsored Programs Services
313/577-2294
2. The Abstract

The abstract is a short summary of the proposed research. It should never exceed 250 words, and usually can be much shorter. The abstract should be written with considerable care, since many agency officials rely on it for their understanding of the proposal as a whole. An abstract should be confined to a description of the proposed project, and should not involve any discussion of the principal investigator’s background, the amount or kind of funding requested, or other peripheral matters, unless these are specifically required by agency guidelines.

3. The Project Description

This is the most important part of any proposal, and the part to which this guide can least address itself. Simply put, the principal investigator’s task in writing the project description is to be persuasive, to convince reviewers that his program will be a good investment for their agencies’ research dollars. In the project description, he must define the problem he is attacking; he must demonstrate his familiarity with the background to that problem, including the literature surrounding it and, often, the work now underway in other laboratories; he must describe his proposed experiments, always fully and sometimes exhaustively; he must explain the techniques he means to employ, in such a way as to show that he understands and can use them; he must specify the observations he plans or hopes to make, and he must explain what he intends to do with the data generated; he must describe the facilities available to do the research; he must outline the organization and personnel plan for the project; and he must attempt to do this in language that is comprehensible to the non-specialist if not to the layman (without, of course, doing violence to the specialized vocabulary of his field, its notation, or its orthographical conventions). and in as brief a space as possible—some agencies stipulate an upper limit for the length of a project description, and the National Institutes of Health even specify maximum lengths for specific sections of the project description.

All in all, the project description is a difficult species of literature, part scientific presentation, part advertisement, part speculative paper. People who are new to proposal writing may find it helpful to look over examples of successful past proposals, since these can serve as guides to writing new project descriptions. Help in writing project descriptions is also available from other sources. Most funding agencies publish guidelines for proposal-writers, and these should be consulted as the first step in composing a project description. For example, the National Institutes of Health’s General Instructions include an outline to follow when writing the proposed “research plan” (= “project description”), complete with major headings:

A. Specific Aims
B. Significance
C. Preliminary Studies
D. Methods
E. Human Subjects, Derived Materials or Data
F. Laboratory Animals
G. Consultants
H. Consortium Arrangements or Formalized Collaborative Agreements
I. Literature Cited
Again, the National Science Foundation provides the following more generalized instructions:

“The main body of the proposal should be a detailed statement of the work to be undertaken and should include: objectives for the period of the proposed work and expected significance; relation to longer-term goals of the investigator’s research; relation to the present state of knowledge in the field; and to related work in progress by the investigator under other support and to related work in progress elsewhere. The statement should outline the general plan of work, including the broad design of experiments to be undertaken and an adequate description of experimental methods and procedures. Any substantial collaboration with individuals not referred to in the budget should be described and documented with a letter from each collaborator. Brevity will facilitate effective review. The project description normally should not exceed 15 single-spaced pages or the equivalent of 30 double-spaced pages is acceptable. Somewhat greater length may be appropriate for multiple-investigator proposals.”

As you can see, these two different agencies require much the same kinds of information in a project description. The precise details of how that information is presented are left to the principal investigator’s discretion; in other words, the nature of the project being described determines the form in which the description is to be laid out; a clear and efficient presentation is all that is required.

Engineering faculty should take note of a special NSF requirement:

“Special guidelines have been established for proposals submitted to the Directorate for Engineering…. investigators should … include a separate section in the proposal which describes the impact of the proposed research. This section should discuss potential new discoveries or advances which are expected as a result of the research and the specific contributions the proposed work will make toward expanding or developing the knowledge and technology base. Reviewers are being asked to provide specific comments on this aspect of the research, including the principal investigator’s own assessment of the potential contributions. The Engineering Directorate is particularly interested in supporting novel and innovative research directed at strengthening the knowledge base in established disciplines as well as research projects seeking to break new ground in emerging areas. Thus, the likelihood that the proposed research will lead to new discoveries or fundamental advances in the knowledge or technology base will be an important criterion on which engineering program staff will base their decision to support a particular proposal.”

This appears at first to be a unique proposal requirement, but in fact it is advisable for investigators addressing any agency to touch on the significance of the proposed work for future investigations. In the case of engineering research, a discussion of possible near- or far-term applications is always appropriate.

It is important to include a short description of the facilities available to your proposed project, for at least three reasons: 1) The existence at the institution of special equipment
or space may be a critical factor in determining whether a proposal is feasible at all; if
your project will require the use of some sort of unusual facility (a cyclotron, a high-
voltage electron microscope, a massive computer), that facility and your access to it
should be described in full. 2) Even conventional research support facilities, such as
glassblowing and instrument shops or large departmental machines (e.g., ultracentrifuges
or gas chromatographs), cannot be assumed to exist at every university; in fact, reviewers
of a proposal are apt to assume that they don’t exist, unless you make specific mention of
them. 3) When your proposal includes a request for specialized research equipment, the
need for that equipment must necessarily be explained in terms of what already exists: the
environment into which the new apparatus will fit must be described and its suitability
made clear; in fact, this consideration is important in bolstering the justification for
equipment requests of any kind.

The principal investigator should always be aware of the criteria by which a proposal will
be judged. These are often spelled out by the agency, usually in a rather general way (see
the Appendix for an example), but sometimes quite specifically. A project description
that has been written consciously to meet published criteria has a markedly better chance
of being supported than one of equal scientific merit that has not.

A word is in order here about illustrations. All funding agencies discourage elaborate or
complicated proposals, and they particularly frown on expensively-produced diagrams,
photographs, drawings, flowcharts, and so on. (These are considered to reflect badly on
an investigator’s cost-consciousness; and so they do.) A neat, clear drawing or diagram is
usually good enough for inclusion in a proposal.

The project description deserves scrupulous care, especially in the final stages of
preparation. Even when deadlines are ressing, a wise investigator will devote a great deal
of time and energy to perfecting this most vital section of the proposal. The Office of
Grants Inquiries of the Division of Research Grants of the National Institutes of Health,
an organization that can speak from enormous experience, publishes a pamphlet entitled
Helpful Hints on Preparing a Research Grant Application to the National Institutes of
Health which contains much pithy advice, including the following:

“Be sure to allow time for a thorough editing and proofreading of your application.
Ironically, many scientists who are extremely precise in their research procedures do not
take the same care in presenting their research. A sloppy application with typographical
and grammatical mistakes, information omitted, and unclear stare- statements makes a
poor first impression on reviewers. They may wonder about the care you will devote to
the actual research. If you cannot comfortably meet the deadline, consider stepping back
and submitting your best effort for the next receipt date.”

4. The Bibliography

This section may be variously titled Bibliography, References. Literature Cited, etc., and
it may or may nor incorporate notes. It serves two purposes: 1) it demonstrates the
amount and, to some extent, the kind of scholarship the principal investigator has put into
his proposal; 2) it provides a starting-place for reviewers to begin their homework.

As to the first purpose: A familiarity with the literature surrounding the topic to be
studied is obviously necessary for any serious research. Further, an understanding of the
relevant scholarship is a sort of credential, a reassurance that the principal investigator is
solidly grounded in the field under study. Especially when the principal investigator is
new or even relatively new to his discipline, he is expected to demonstrate the
thoroughness of his spadework. As to the second purpose: It is the practice of virtually all
funding agencies to obtain scientific evaluations of a proposal from experts in the field.
This technical review is normally entrusted to specialists who will be familiar with the
subject at hand; however, enough people with the specialties necessary to make quick,
accurate judgments are not always to be found. Thus, the individuals who review
proposals for scientific content may often not be as knowledgeable as the principal
investigator. A conscientious reviewer will familiarize himself with the subject of a
proposal before he attempts to make a technical evaluation, and to do this he needs a
bibliography. The exact format for bibliographic citations varies greatly from one
scholarly field to another. The prevailing form in your own discipline is always the one to
use.

5. The Biographical Sketch

This is one of the most important parts of a proposal. The competence of the people
proposed as researchers has much (perhaps everything) to do with whether or not a
project will yield meaningful results. A researcher’s biographical sketch is the only way
by which reviewers can evaluate his competence; it is his introduction to them, and,
normally, it must serve as his only credentials. The National Science Foundation requests
reviewers to comment on the principal investigator’s recent research record or other
evidence of research potential, asking whether the record suggests that the principal
investigator is likely to make an important and original contribution. Reviewers must
evaluate recent research accomplishments, or, especially for younger scientists, other
evidence of potential.

Of course, the importance of a biographical sketch or vita is well known to everyone who
has ever achieved professional status in a learned discipline. The usual practice is to
include in your vita everything you have ever done in a professional way: every
committee membership, every occasional paper, every workshop, every minor society
joined. Many people include even their height, weight, hobbies, and state of health. In a
vita for use in seeking academic employment, this practice has some merit, but for the
specialized purposes of a research proposal it is not a good idea. First, sheer bulk is an
irritation to funding agencies. Irrelevant derails simply add to the amount of paper that
officials must handle. (The National Institutes of Health and NSF impose strict page
limits on biographical sketches.) Second, the biographical sketch is only intended to
indicate the investigator’s competence as regards the Project Director; many details of his
professional history and personality which would be interesting in a larger context are nor
germane to the proposal.
What should go into the biographical sketch? The following list gives the basic items:

- Name
- Date and place of birth
- Educational history, beginning with the Bachelor’s degree
- Honors, beginning with graduate-level awards
- Major presentations at professional meetings within recent years
- Publications

About publications: These are probably the most important things in anyone’s biographical sketch; they demonstrate the range and quality of a person’s work; they constitute his contribution to posterity; through them, his name will become familiar to his colleagues. Everyone is proud of his publications list. However, when a list is very long, and especially when many of the publications are not relevant to the proposed project, some pruning is called for. A publications list can be shortened in several ways: It can be a list of selected publications, including major papers and books from an individual’s entire career. It can be a list of relevant publications, i.e., a list of works that bear on the proposed project. It can be a partial listing of publications, covering perhaps the last five or ten years. Combinations of these can also be used. Probably the most important thing to remember about your publications list (and your entire vita) is that it must be kept current. Articles not yet in print can legitimately be included in your list of publications if they are relevant, but it is essential that the citations be corrected as they are published. Generally speaking, it is important in listing publications to separate those that have been subjected to a critical peer review (refereed) from those that have not (typically, contract reports or intra-university manuscripts). Also, presentations at professional conferences should be separated from printed works. Proposals should include a biographical sketch for all professional personnel involved in the project: associated faculty-members, major collaborators from other institutions, postdoctoral research associates, and so on. In short, anyone who is making a substantial contribution to the project deserves, and ought, to have his vita included.

6. Current Support and Pending Applications

This is one section of the proposal where little judgment need be exercised. Virtually all funding agencies require information on the principal investigator’s present support and pending proposals, his current commitments. The same sorts of information must be supplied both for grants and contracts in force and for pending proposals. This requirement applies not only to the principal investigator, but to all other faculty formally committing time to a proposed project, even if their roles are relatively minor.

Exhibit 2 shows the kinds of information needed: funding agency, grant or award number, project title, dates, other faculty involved in a major role, dollar amount, and principal investigator’s time-commitment. The last item must specify the principal investigator’s summer and academic year time-commitments to the project.
EXHIBIT 2

Current Support and Pending Applications

Current Support
U.S. Forest Service Grant 17581CA, “The Effects of Fire on Bending Strengths of Intact Yellow Pine,” 1/1/89 to 12/31/93, $199,720; Dr. Doe’s time-commitment: 5 percent Academic Year, 100 percent two months summer.

Pending Applications
Proposal to NSF, “Computer Analysis of Audubon Society Annual Census” (B.E. Smith, Principal Investigator), NSF ID No. 860001, 2/1/91 to 12/31/93, $278,000; Dr. Doe’s time-commitment: 15 percent Academic Year, 100 percent one month summer.

The present proposal is currently being submitted to the NRF and to the American Animal Society. Submission to other agencies (e.g., AFOSR) is planned for the near future.
7. The Budget

Many people find the budget the most worrisome part of a proposal. Consequently, this section will go into the organization and calculation of budgets in detail, with the aim of providing an all-purpose guide to their preparation.

Here’s a piece of advice about your budget: Leave it until last. No one can realistically foresee budgetary requirements until the project description is down on paper. Too often, investigators work up what they think will be a final budget before tackling the rest of the proposal, and then discover that their real needs are different from what they originally anticipated. Having a well-organized project description in hand will greatly simplify budget preparation. First things first.

The sample budget shown in Exhibit 3 is essentially in the format used for such major funding agencies as NASA and the Air force. It can serve as a worksheet for calculating budgets for any type of project. (An Excel spreadsheet for preparing budgets is available here.) As you can see, it is arranged by cost categories, answering to different types of anticipated expenditures. Arrangement by cost categories is the basis of budget organization. This is not the obvious fact it may seem, since many investigators land not always the novices) will try to organize budgets by activity or component, so that cost items of the same type appear in several different places. (Some agencies may require a budget summary organized by project component, but this will always be as a supplement to the detailed category-type budget.)

The reasons for organizing a budget by cost category are: 1) clarity and simplicity of presentation, 2) ease of matching proposed budget items to the eventual award document, which is invariably arranged by cost category, and 3) simplifying the task of the University’s grant and contract administrators, whose records must necessarily be organized by type of expenditure.

The sample budget is also organized by funding period, with a separate column for each twelve-month period of the proposed award. Again, this is not an obvious way of doing things, since some investigators see their projects in terms of timed phases (e.g., an initial exploratory phase, one or more investigative phases, and a final phase for report writing), and will attempt to divide their budgets into periods corresponding to these phases. Another common mistake is to prepare a separate, complete budget for each year of the proposed grant or contract; this involves needless and confusing repetition of details.

The reasons for arranging a budget by twelve-month periods are much the same as for arranging it by cost category: simplicity and clarity, correspondence to agency practice (even multi-year awards are broken into twelve-month periods), and ease of later fiscal accounting.

Specific rates and percentages may change in the course of time. Call the Research Support Office with questions.
Organization by cost category and organization by funding period: these are the only basic principles that need to be observed for good budget preparation. Now, let’s turn to the items shown in Exhibit 4 and discuss them one by one. The numbered headings below correspond to the numbers in brackets in our sample.

[1] Budget Heading
This heading gives the official title of the agency to which the proposal is being submitted.

[2] Starting Date
This is the day on which it is proposed that the award actually begin.

[3] Duration
This is the period of time proposed for the active life of the award, and should be appropriate to the anticipated amount of time needed for the completion of the project.

[4] Salaries and Wages
This category includes only those payments to project workers which are made on a salary or wage basis. Personnel are normally listed in the order shown.

Salary increases for future years are projected using four percent annual increases. When calculating salaries, remember that annual increases are calculated from September 1 for faculty who have academic year (i.e., nine-month) appointments. Faculty salaries for the summer are calculated on the basis of the preceding academic year salary:
Graduate Research Assistants’ salaries begin at $10,600 per half-time A.Y. appointment. Summer salaries are prorated from this amount, e.g., a full-time three-month summer salary is obtained by dividing the A.Y. amount by 4.5 to obtain a full-time one-month salary, and then multiplying this figure by 3.
Hourly workers’ wages should be estimated as precisely as possible, but often the exact number of man-hours and the prevailing rates of pay cannot be determined in advance. The sort of detail shown here is usually sufficient.

This item covers retirement, Social Security, and medical/dental/life insurance.

Tuition should be budgeted as a fringe benefit for Graduate Research and Graduate Student Assistants.

[6] Permanent Equipment
This category is defined by the University as including all items costing over $2,500 per unit which have an expected service life of one year or more. Our sample shows only a very simple case; real-life investigators seldom have things as easy as Dr. Doe. Many budgets include long, complicated lists of equipment items; often, unit prices are difficult to determine, or model numbers for specific items cannot be located. Sometimes, only the generic term for a piece of equipment can be given, with an approximate price based on past experience. Since proposal budgets are meant to cover periods sometimes years in the future, inflation becomes a factor. The best rule to follow is this: provide as much specific information as possible without overloading the budget format.

[7] Expendable Supplies and Equipment

This category includes material items that cost less than $500 per unit and/or last less than one year in service. Such things as postage, typing services, and long-distance phone calls are not included here. Expendables should be broken down into major categories; in this context, “major” means classes of items which will involve large expenditures. Past experience is the investigator’s best guide in estimating the cost of expendables, but again, as with permanent equipment, specific details should be included when possible.

[8] Travel

This category is subdivided into Domestic and Foreign. Domestic travel includes all trips within the U.S., its possessions, and Canada. Foreign travel includes trips beginning or ending in another country. The Travel category, particularly foreign travel, should be quite detailed. To be sure, not every agency requires as much detail as we have illustrated here, but many do (NASA and DoD, for example), and a prudent investigator will make it a habit to plan and explain his travel requirements with a fair degree of minuteness. As far as possible, each trip should be specified as to traveler, purpose, destination, and duration. As shown in our sample, there should be separate lines for airfares and living expenses, and for such items as registration fees, bus and taxi fares, and rail tickets.

Because such highly specific information is required for Travel, the best practice is always to obtain up-to-date information on anticipated costs. Registration fees for meetings of professional societies are usually published well in advance, but when they are not, a letter to the society’s secretary is worth the trouble. Local bus and taxi fares are harder to estimate, but past experience (your own or a colleague’s) will serve as a guide.

[9] Publication Costs

This category is meant to cover the cost of disseminating research results. Normally this involves preparation and submission of required reports, publication in professional journals, and the cost of manuscript preparation and duplication. The amount of detail shown in our sample budget is usually adequate, although a more detailed breakdown is always helpful. When dissemination of results is to be by some other means than print, this should be explained fully. Failure to budget for this item may raise questions in reviewers’ minds.

[10] Other Direct Costs

This category is for everything not covered by the more specific categories discussed above. It includes such things as: consultants’ fees, shop and other services, computer costs, subcontract costs, books and journals, equipment maintenance costs, xeroxing,
special rental costs, and so on, almost indefinitely. The same rules apply this category as
to other categories: provide specific details and up-to-date cost estimates whenever
possible.

This is a single line, showing the total of all preceding categories.

[12] Indirect Costs
The University negotiates an indirect cost schedule with its Federal audit agency, the
Department of Health and Human Services, to cover costs of office space, library usage,
general support services, heating, lighting, insurance, etc. This indirect cost does not
cover secretarial or shop services, special facilities, the use and maintenance of major
equipment items, etc.; these latter items should be budgeted separately under an
appropriate category. Wayne State’s negotiated indirect costs for research projects are
computed as a percentage of a modified total direct cost (MTDC) base. All direct costs
are included in this base EXCEPT the following: tuition and stipend payments, patient
care charges, permanent equipment, and that portion of each individual subgrant or
subcontract in excess of the initial $25,000.

[13] Total Costs
This is a single line, showing the total of all costs, direct and indirect.

[14] Total Requested
This line gives the total costs for all years of the proposed budget.
EXAMPLE BUDGET

BUDGET

[1] National Research Foundation

[2] Starting Date: 12/1/01
[3] Duration: 24 months

[4] Salaries and Wages

<table>
<thead>
<tr>
<th>Position</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator: John E. Doe</td>
<td>8100</td>
<td>8,424</td>
</tr>
<tr>
<td>15% time, 9 mos AY</td>
<td>18,000</td>
<td>18,720</td>
</tr>
<tr>
<td>100% time, 3 mos summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Research Assistant</td>
<td>10,600</td>
<td>11,024</td>
</tr>
<tr>
<td>50% time, 9 mos AY</td>
<td>7,067</td>
<td>7,350</td>
</tr>
<tr>
<td>100% time, 3 mos summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Technician</td>
<td>8,400</td>
<td></td>
</tr>
<tr>
<td>40% time, 12 mos</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate Assistants</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Hourly basis, $12 to $14/hr</td>
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<td></td>
</tr>
<tr>
<td>Total Salaries and Wages</td>
<td>53,167</td>
<td>46,518</td>
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</table>


<table>
<thead>
<tr>
<th>Category</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.2% of AY salary</td>
<td>1,798</td>
<td>1,870</td>
</tr>
<tr>
<td>15.4% of summer salary</td>
<td>2,772</td>
<td>2,883</td>
</tr>
<tr>
<td>Graduate Assistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.6% of AY salary</td>
<td>1,866</td>
<td>1,940</td>
</tr>
<tr>
<td>7.6% of summer salary</td>
<td>537</td>
<td>559</td>
</tr>
<tr>
<td>Tuition</td>
<td>3,956</td>
<td>3,956</td>
</tr>
<tr>
<td>Research Technician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.5% of salary</td>
<td>2,730</td>
<td></td>
</tr>
<tr>
<td>Total Fringe Benefits</td>
<td>13,659</td>
<td>11,208</td>
</tr>
</tbody>
</table>

[6] Permanent Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscilloscope, B &amp; M Model 300</td>
<td>36,000</td>
<td></td>
</tr>
<tr>
<td>Fermentor, SupraTek Model BL with probe</td>
<td>3,450</td>
<td></td>
</tr>
<tr>
<td>Total Permanent Equipment</td>
<td>36,000</td>
<td>3,450</td>
</tr>
</tbody>
</table>
[7] Expendable Supplies and Equipment

Components for equipment upgrades, small tools, experimental gases  2,500  3,500
Office and computer supplies, film and processing  1,000  1,000

Total Expendable Supplies and Equipment  3,500  4,500

[8] Travel

Domestic:
Project personnel to attend conference and meetings (air fares, lodging, ground transportation, meals, conference fees)  2,500  2,500
Project personnel to field sites: mileage @ $.32/mile  400  500

Foreign:
P.I. to attend Copenhagen Research Conference, June 11-17, 2000
Air fare, RT coach  2,500
Living expenses, $177/day, 7 days  1,239
Local transportation, fees to include 1-day trip to Ogestaad Research Station  500

Total Travel  7,139  3,000

[9] Publication Costs

MS preparation (including scanning), page charges, reprints in J. of Vibration Engg.  1,000  1,200

[10] Other Direct Costs

Machine shop charges @ $7.50/hr  1,200  1,500
EM services, WSU Shared Instrumentation Facility, est. $152/hr  1,520  3,040

Total Other Direct Costs  2,720  4,540


[12] Indirect Costs

On campus: 49% of Modified Total Direct Costs (per HHS agreement, 8/4/98)  37,842  32,835

[13] Total Costs  155,027  107,250
8. The Budget Justification

This section is one of the more important parts of a proposal, and one that suffers too much neglect. Competition for research funding grows steadily keener. Where once it was enough to list the items requested and their cost, now the Principal Investigator must make a case for almost everything he needs. The better his case, the better his chances of getting what he wants.

The budget justification serves another purpose: as a self-check against budget padding. The budget should contain requests for everything you need to do the proposed work in first-class style, but nothing beyond that. If you find it hard to justify a particular item, perhaps it is really superfluous or excessive.

A budget justification may seem redundant in many cases, but in fact it is not. The need for a particular piece of equipment, for instance, may be implied in the project description, but the implication is not necessarily apparent to a non-specialist reviewer: the need must be made explicit. The place to do this is in the budget justification, which should immediately follow the budget.

These are the major items to include in your budget justification:

a) Salaries for research associates, graduate students, technicians, and hourly help
b) Permanent equipment, item by item, in terms of its place both in the proposed project and in existing facilities already available
c) Large or unusual categories of supplies
d) Travel, especially any sort of foreign travel
e) Consultants’ fees
f) Subcontract costs
g) Any special items not easily justified by the nature of the proposal as a whole

In short, it’s better to include too many items in the budget justification than not to include enough.

SPA now requires a budget justification in all proposals, without exception, and for a very cogent reason: In the event of an award, the information in the budget justification is required by the research accountants who set up the University fund index (i.e., the account) against which project costs are charged.

9. The Attachments

Attachments and appendices to research proposals are optional items. Usually they are included for purposes of elaborating on the project description, but they may also contain illustrations, samples of past work, or some part of the proposal which is too unwieldy to include in the main sequence (for instance, if a great many professionals are involved, it may be advisable to include their biographical sketches in an appendix). Generally
speaking, attachments should be kept to a minimum, and should be clearly identified as items that are subsidiary to the main proposal.

PRIVATE SECTOR AND DEVELOPMENT PROPOSALS

As mentioned above, this guide uses a research proposal as its basis for discussion. Frequently, of course, faculty members will wish to address proposals to private corporations or foundations, seeking support for such things as scholarships, graduate fellowships, travel, equipment, or general departmental activities. These private sector proposals are often viewed as comprising a different species of application, requiring a different approach and different techniques.

In fact, private sector proposals differ from research proposals more in detail than in substance, and the type of information required for one is usually required for the other. There are some differences in emphasis, however:

- Private sector proposals require somewhat more background information on the University and the particular department or program concerned.
- Private corporations and foundations often have clearly, even narrowly, defined goals, and the proposal should address these directly and succinctly.
- The need for the proposed activity, usually self-evident in the case of a research proposal, should be spelled out carefully in proposals to private sources.
- Private sector proposals should be short: no more than two single-spaced typed pages. Supporting material, an itemized budget, and/or other data specifically requested by the prospective grantor should be included as an appendix.

Development proposals, like research proposals, should be preceded by a letter of inquiry or a telephone call. Increasingly, private sector funding sources are requesting that the initial contact be in the form of a letter or mini-proposal. This practice saves time and effort for both grantor and grantee. In some cases, a full proposal may be requested at a later date. After submission of any proposal, it is important to maintain contact with the corporation or foundation, as discussed in the section entitled “The Post-Submission Period.”

A final word about budget planning is in order. No one is well served by attempting to do a project on the cheap; if a budget is too high, the funding agency will negotiate with the University. There have been recent instances where low-balled proposals have resulted in underpaid faculty and graduate students, inadequate research resources, and urgent requests to the Deans and Vice Presidents for Research for emergency cost sharing. A grant proposal is not a bidding contest. It’s not the lowest bottom line that gets the award; it’s the best prospect for success in research and education that wins.
Often a specific agency program or foundation will require cost sharing. This must be carefully negotiated with University officials in advance. The best cost sharing consists of commitments already made or pending approval. Next best are in-hand services which do not directly commit additional dollar expense. The most difficult cost sharing represents cash outlay from University resources (this includes waivers of indirect cost). Principal investigators should understand that there is a limit to the University’s dollar resources and that the administration has little interest in subsidizing the government or private foundations. In no case should cost sharing be offered voluntarily in an attempt to enhance the prospects of funding. Creative and imaginative approaches to meeting cost-sharing requirements at little real expense have been very successful.

PROPOSAL PROSPECT ENHANCEMENT

So far we have discussed a number of aspects related to the content and structure of successful proposals. In this section we will suggest some ideas which can improve a proposal’s prospects for funding. All of these ideas represent methods for improving the investigator’s credibility and the perceived prospects for successful, distinguished completion of the research effort. The less of an established reputation the prospective grantee has, the more important these points are. All these ideas are based on the fact that a reviewer or program officer will be more willing to invest in a sure thing, sometimes with a reputation backing it, than in something that is untried, unknown, or unconvincing.

The first idea is to cooperate or collaborate with a colleague at a first-tier university: MIT, Stanford, Michigan, Illinois. Cal Tech, U.C. Berkeley, etc. The credibility of these institutions will rub off onto your proposal, and the chances for success will therefore be higher. By the same token, interaction with a Federal laboratory is worth consideration, e.g., with the Naval Research Laboratory, the Air Force Avionics Lab, NIH, TACOM, EPA, NASA, and DOE facilities. Program officers like to see extramural research support and interaction with efforts judged to be important to the nation.

Collaboration with an industrial laboratory is viewed very favorably by reviewers, for a number of practical reasons. Access to machinery and other resources is easier and more convenient in an industry-university collaboration, thus reducing the time needed to complete the project.

Most problems related to technology transfer are automatically resolved in these interactions, as the industrial firm has a built-in commitment to coordinate the technology utilization process from the very start. Since corporate resources are being expended, even if only in-kind or through intellectual consultation, this investment in a university professor’s research lends it a higher level of credibility than it might otherwise have. This collaboration with industry provides a kind of leveraging, which means that the grantor agency’s decision to fund already has the equivalent of a seal of approval from an organization experienced in discretionary research investments. This situation makes reviewers and program officers much less anxious about awards to inexperienced investigators.
Industrial collaboration also begins to address the funding agency’s nightmare: research quality control. An internal program of research quality assessment at any university in the United States is the exception rather than the rule. Quality assessment usually the scientific and engineering community’s judgment after the research is completed, but not during the actual research effort. Recent examples of this problem are cold fusion, room temperature superconductors, and polywater. On the other hand, when the reputation of AT&T, IBM, Ford or GM is held up to scrutiny, the public can have a much higher degree of confidence that the research was done properly, that the results have been confirmed, and that the claims are reasonable. This is extremely important, as a research grant presumes only a best effort, not a warranty of success. In a university, one person’s best effort may be another’s substandard job. Industrial collaboration is an appropriate basis for insuring a high-quality effort. One note of warning: association with entrepreneurial efforts may be detrimental, if the reviewers look at these small firms with suspicion. If reviewers feel that a professor is in cahoots with a disreputable promoter, the jig is up.

Another idea to enhance proposal success is an association with a recognized senior mentor, who will serve as Co-Investigator. Your work will then be seen in the brilliant light of the Co-Investigator’s reputation, even if you do all the work. To some extent, success breeds success, and this is an opportunity to adopt a distinguished parent. Many relatively new assistant professors are reluctant to adopt this strategy, out of independence, pride, and concern for tenure-track performance assessment. These issues are beyond the coping of this guide, but the point is that recognized researchers are rarely without support. At NSF, for example, 80 percent of all grant renewals are funded, while the funding rate for new proposals is only 10-20 percent. By bringing the right mentor with you, you increase your chances of funding by at least four-fold. If you have a senior Co-Investigator on your grant, the question of your contribution will come up at tenure time. However, this is only a nuisance compared to having a substandard funding record.

Wayne State is a special place. Almost 27 percent of our students are from underrepresented minorities. Wayne State is also an urban university: over 90 percent of the U.S. nationals enrolled here live in Oakland, McComb, and Wayne Counties. Our undergraduate and graduate programs reinforce the educational aspirations of gainfully employed people in Detroit. More engineers at Ford and Chrysler are graduates of Wayne State than of any other university in the world. These and other special facts should be used as boiler plate in any proposal, to stress the special institutional and educational impact of a research grant here. Frequently, persuasive arguments about our special culture and role in Detroit can overcome a technical deficiency in your proposal. To the extent that an award not only provides support for you but also for the academic infrastructure at Wayne State, the chances for a positive funding decision are improved.

THE COLLEGE AND UNIVERSITY REVIEW PROCESS

A proposal is a request on the Dart of Wayne State University for funding for a specific project. Any award resulting from a proposal will be made to the University, which is the grantee or contractor. The Office of Research and Sponsored Programs Services is the department of the University charged with overseeing the orderly submission of all research proposals and with supervising the receipt and use of funds awarded in response to such proposals.
In the case of Engineering faculty, the College and University review process for research projects is initiated by bringing the proposal to Mr. Ed Sackett, the College’s Research Support Officer. Mr. Sackett is available to help with any questions regarding proposals and funded projects. When a proposal is in finished form, he will complete and attach an SPA Form for External Support (FES). Then he will obtain the signatures of 1) the principal investigator, 2) the chairman of the relevant department and/or center, 3) the Associate Dean, and 4) the Director of SPA. With this last signature, the proposal is a finished document, ready for copying and transmital to the funding agency.

More often than not, proposals come to the office of the Associate Dean for signature scant days or sometimes hours before the deadline for delivery to the potential funding agency. While this is understandable in many cases, and the College has always accommodated such last-minute rushes in the past, this practice forecloses on any opportunity to enhance our success ratio by incorporating suggestions for revision and improvement.

Particularly in the case of faculty inexperienced in proposal writing, a quick reading and brief comments by an experienced colleague will usually contribute to a stronger proposal. This informal review should be conducted within a department or center. Either the chairman or an experienced faculty-member with interests close to the subject should read such proposals before they come to the Associate Dean’s office for signature.

Proposals to be submitted to private corporations or foundations for development support are initiated through the College’s Development Officer, who cooperates with the Office of University Development. Information and questions about development-related activities should be addressed to the College’s Development Officer.

If your proposed research involves human or animal subjects, or material derived from human bodies, it must also be approved by Wayne State’s Human and Animal Investigation Committee.

THE POST-SUBMISSION PERIOD

After your proposal has made it safely to the agency, you can expect to receive some form of acknowledgment of receipt, usually a card or letter, in two or three weeks. (Some funding organizations include a receipt card as part of the application materials.) If you don’t receive acknowledgment after about three weeks, a telephone call or a written inquiry about your proposal is in order. It is important to stay in touch with the funding agency while the review is in progress, particularly as the reviewers’ reports begin to come back to the agency. This should not involve weekly telephone conference, but occasional short calls reassure agency personnel that you are interested, and ready to carry out the proposed research.

As mentioned earlier, proposal review takes time. If the agency in question has not published a specific date for announcement of awards, you should allow at least four months for review of your proposal. Sometime toward the end of this period, a short written inquiry can be sent, asking about the progress made in evaluating your proposal,
and closing with some such statement as “If you need any further information or clarification, please feel free to call on me.”

Frequently, they will call on you. Negotiations of some sort are an almost invariable part of grant and contract awards. Very often, the proposed budget must be trimmed and/or reapportioned, and the principal investigator, the Engineering Research Support Office, and SPA must all be involved. Additional material may be required; in some cases the proposal itself must be revised, or even resubmitted in a different form.

Be sure to keep the College’s Research Support Office informed of developments during the post-submission period. The Research Support Officer and the Associate Dean for Research can help you in many ways while your proposal is under review, but to do this they must be kept posted on the status of your application and on what you have been told by the prospective grantor.

If the agency recommends funding of your proposal, you will frequently learn this through your phone contacts. A starting date for the program can generally be obtained prior to the final processing of the formal paperwork by the agency. This tentative starting date will enable SPA to establish a temporary account number against which to accrue charges necessary to get the research under way. A Tentative Grant/Contract request form must be completed when such accounts are requested. (The lead time in obtaining new equipment or supplies frequently requires early orders so as not to delay the beginning phases of the program.) The formal paperwork, or contract/grant instrument, usually takes about one month to arrive at the University and be approved by SPA and by Wayne’s legal representatives. Upon this acceptance the temporary nature of the account number is removed and the account becomes fully active with the approved budget.

If your proposal is rejected, don’t be too downhearted. In the nature of things, many good proposals must be refused funding for reasons that have nothing to do with their scientific merit: programs or entire agencies can be curtailed, priorities can change, available funds may be exhausted, and so on.

In fact, initial rejection of a proposal, even on scientific grounds, can actually be helpful. In such cases, the reasons for rejection must be made known to the principal investigator, and in every case these reasons (especially the reviewers’ comments, since these are the considered remarks of your colleagues) will be of use in revising and improving your proposal for resubmission. Even without reviewers’ comments, the passage of time seldom hurts a basically sound research proposal: new data related to the proposed project will become available, and the principal investigator will sharpen his skills and insights into the problem. In these days of increased competition for research dollars, intelligent persistence in seeking funds is a necessary virtue. With skill, patience, and good humor, the effort will always be repaid.

PROPOSAL SUPPORT SERVICES

As detailed in this booklet, the Research Support Office of the College of Engineering is available to help you submit research proposals. Mr. Ed Sackett (ext. 7-3759) will aid
you in preparing the detailed budget, editing the text, meeting the format requirements of
a particular agency, and ensuring that the proposal conforms to University requirements.
The Research Support Office will also work with you in identifying agencies likely to be
interested in your proposal and in locating individual program officers at these agencies
who can be contacted prior to submission.

In preparing the detailed budget and budget justification for a proposal, it is important to
discuss your facility and equipment needs with College shop personnel. The personnel of
the Engineering Shop can advise you on material and technical requirements for
equipment construction. Mr. Randy Szabla (ext. 7-3902), manager of the Electronics
Shop, can advise you on available electronic equipment and preferred new
instrumentation to meet your research needs.

The College and University make these facilities available to enable you to design a
better research program, and will work closely with you in carrying out the research.
Take advantage of these resources preparing your research proposal.

APPENDIX

NSF PROPOSAL EVALUATION CRITERIA

(Source: Grants for Scientific and Engineering Research, NSF 00-2)
The National Science Board approved revised criteria for evaluating proposals at
its meeting on March 28, 1997 (NSB 97-72). The criteria are designed to be
useful and relevant across NSF’s many different programs, however, NSF will
employ special criteria as required to highlight the specific objectives of
certain programs and activities.

The merit review criteria are listed below. Following each criterion are
potential considerations that the reviewer may employ in the evaluation. These
are suggestions and not all will apply to any given proposal. Each reviewer
will be asked to address only those that are relevant to the proposal and for
which he/she is qualified to make judgments.

Criterion 1: What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding
within its own field or across different fields? How well qualified is the
proposer (individual or team) to conduct the project? (If appropriate, the
reviewer will comment on the quality of prior work.) To what extent does the
proposed activity suggest and explore creative and original concepts? How well
conceived and organized is the proposed activity? Is there sufficient access to
resources?
Criterion 2: What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

PIs should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to the above-described NSF merit review criteria. NSF staff will give these elements careful consideration in making funding decisions.

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students, and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- are essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.