National Science Foundation – TUES Program

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FOLLOW THE GUIDELINES

- Catastrophic consequences
  - TUES Type 2 – Multi-institutional
- Creates doubt about attention to detail
Other General Recommendations

- Need an excellent idea
- Informally test your ideas on colleagues
- Find colleagues who will provide substantive and critical comments on drafts of your proposal
- Listen to those colleagues
- If the proposal is rejected, resubmit and address the criticisms of the reviewers
  - Unless idea does not merit funding
- Talk to the program officers
Review Criteria (NSF)

- Intellectual Merit
- Broader Impact

- Project summary must have a distinct paragraph on each – proposal must clearly address each
- Reviewers must specifically evaluate each (separate sections on reviewer’s form)
Components of an NSF Proposal

- Project Summary (1 page)
- Project Description (15 pages)
- Literature References
- Biographical Sketch (2 pages)
- Budget and Justification
- Current and Pending Support
- Facilities and Equipment
TUES Program

- Type 1 ($200K) - $250K if have significant involvement of a community college

- Type 2 ($600K) – multi-institutional, far-reaching in scope

- Type 3 ($$$$$) – national project
Cycle of Learning

- Five steps:

- Type 1 projects typically will address one program component and involve a limited number of students and faculty members at one academic institution.
Type 1 – What can you ask for?

- Instructional equipment
- Summer salary for laboratory/material development
  - Usually 1 month (2 months – must justify)
- Travel
  - To observe other methods
  - To disseminate results
- Consultant(s)
- Assessment
High Quality Learning Experience

- Must be new – can’t just be replacing equipment to continue what is already being done

- Curriculum needs to move in a new and improved direction

- Inquiry/discovery-based experiences
Desired Learning Outcomes

- **Knowledge outcomes** – “..particular areas of disciplinary or professional content that students can recall, relate, and appropriately deploy.”

- **Skills outcomes** – “the learned capacity to do something – for example, think critically, communicate effectively, productively collaborate, or perform particular technical procedures – as either an end in itself or as a prerequisite for further development.”
Affective Outcomes – “..usually involve changes in beliefs or in the development of particular values, for example, empathy, ethical behavior, self respect, or respect for others.”

Learned abilities – “..typically involve the integration of knowledge, skills, and attitudes in complex ways that require multiple elements of learning. Examples embrace leadership, teamwork, effective problem-solving, and reflective practice”

Base on Prior Work

- NSF reports
- Other NSF-funded projects
- Other educational/scientific reports
- Other publications that inspire/guide your plans
- Pilot work you have already done

- Thorough literature review/references
Provide Specific Examples of Discovery-Based Activities

- Sprinkling the words “discovery-based” throughout is not enough
- Do not provide example experiments that are cookbook
- If sample experiment is too long to include, put up on a web site and put URL in text of proposal
- Best if can provide specific examples for each course involved in proposal
Implementation Plan/Timeline

- When curriculum development will occur
- When changes incorporated into courses
- Formative/summative assessment plans
Describe Research Uses

- Academic and summer to show that equipment will be used year round

- Better if a serious research program
  - one that leads to expected outcomes of research (peer-reviewed publications, conference presentations)
Assessment Plan

- Use established processes that already exist at the institution (student evaluation of courses)
- Better to bring in an expert to do this – institutional research officer, faculty member with demonstrated experience
  - Need to show this person’s expertise – mention in text – include biographical sketch
Dissemination

- More than putting on web site
- Conference talks
- Discipline-specific networking opportunities
- Peer-reviewed publications (although helps if already have a track record)
Institutional Support and Matching Funds

- Officially – these are not allowed
  - Can’t be put into the budget
- Practically – they are allowed
  - Show budget of $200K
  - Put matching component into budget justification
- Need letter of commitment
  - Attach as appendix
Other Institutional Support

- Travel support
- Student assistants to help with project
- Department funds for materials and supplies
- Include in the budget justification