Proposed Projects Review Initiative for review, revision and costing

To: Strategic Planning Task Forces Subcommittee: Project-Based and Cooperative Learning (PBCL), Outcomes Assessment and Feedback (OAF)

Copy: Chairs: Faculty Governance Committees, Director of CED, IGSD Directors, Project Board

From: Planning and Implementation Committee (PIC), Prof. Chrys Demetry, coordinating committee member

RE: Proposed Projects Review Initiative for review, revision and costing

A central theme in the recommendations of the Project Based and Cooperative Learning (PBCL) and Outcomes Assessment and Feedback (OAF) Strategic Planning Task Forces was the need for faculty to agree upon the objectives and expected outcomes of WPI's projects-based education. Furthermore, guiding principles articulated by the Strategic Plan Steering Committee (SPSC) included "Project-based and cooperative learning will be central to the curriculum," and "The community will regularly reassess its goals and vision, evaluate its progress, and be cognizant of its relationships and responsibilities to the local community and the world beyond the campus." SPSC also submitted the following goal statements in its final report which was endorsed by the WPI faculty: *Continue to Innovate in our Undergraduate Program* and *Recognize and Adapt to Continuing Change*.

Below we describe our current view of the nature and extent of an initiative that we believe follows from the Task Force recommendations. Following the draft initiative we list the Strategic Plan Steering Committee goals, endorsed by the WPI Faculty, that this initiative supports, along with the Task Force recommendations (with the originating task force acronym in parentheses) from which this initiative evolved. Also included is some discussion from the Task Force and other reports that, while not presented as recommendations, provide some additional context about this issue. Finally, we outline a specific request to your group to assist us in defining further this initiative and the resources that would be required to address it.

PIC requests that your subcommittee act as the sounding board for campus reaction to the ideas in this initiative and that you assist PIC in modifying and finalizing an appropriate initiative for campus approval and faculty ratification.

**Draft PIC Initiative**

PIC has come to the conclusion that it is a strategic imperative to acknowledge and strengthen WPI's core competency: our projects-based undergraduate program. The PBCL and OAF task force reports, along with recent CAP discussions regarding the IQP, make it clear that there is not consensus among the faculty
about the goals, objectives, expectations, and expected outcomes of our three project degree requirements or of the unified whole. In addition, in preparation for the ABET Criteria 2000 visit, each engineering department may have identified different ways in which the Sufficiency, IQP, and MQP are intended to address expected educational outcomes, along with different assessment and evaluation methods. Furthermore, many non-engineering departments were not involved in this process. We are now in the situation where different departments may have different expectations for the objectives of these projects; this fragmentation needs to be rectified by reaching Institute-wide consensus and publishing the objectives and expected outcomes of the projects.

PIC proposes the establishment and funding of a one-time Projects Review Commission composed of faculty, students, alumni, and employers. The Commission would be charged with an intense and timely effort to:

1. Define the objectives and expected outcomes of the Sufficiency, IQP, and MQP, build consensus for these objectives, and recommend them to the Committee on Academic Policy for ultimate approval by the Faculty. The Commission should also review the relationships between the projects. The goal is to have project objectives and expected outcomes published in the Undergraduate Catalog by the 1999-2000 academic year.

2. Recommend a process for continual assessment of project outcomes. PIC recognizes that meaningful outcomes assessment is not a one-time activity; indeed, defining objectives is only the first step of an outcomes assessment cycle. PIC anticipates that the CEDTA (Center for Educational Development, Technology, and Assessment), proposed in another PIC initiative, would be the ideal group to pick up where the Projects Review Commission leaves off by leading outcomes assessment and resulting pedagogical and curricular innovation on a continuous basis.

3. Recommend to CAP and the administration whether a broader curriculum review is needed. In the 1994-95 academic year, CAP presented a motion to COG proposing a "comprehensive curriculum review":

The review should articulate the educational philosophy of the Faculty, reassert the Faculty's commitment to curricular innovation, and ultimately result in an Institutional program of studies sustainable by available resources. (CAP Minutes, 12/15/94)

The rationale for such a review at that time seemed to be the perception that many ad-hoc changes had been made in our undergraduate program (distribution requirements, minors, concentrations) since the inception of the Plan without taking the time to reflect on the pedagogical intent of the whole program. In addition, with ABET Criteria 2000 on the horizon, CAP envisioned the opportunity for reinstituting more flexibility in our curriculum and pedagogy if it was accompanied by outcomes assessment. There was also some sentiment in COG that an examination of resource allocation issues that led to the ballooning of class sizes be part of such a review. COG and CAP minutes from that year make it clear that faculty were "fed up and fatigued" with past studies that had not produced any concrete results. The CAP motion was never acted upon, and the only result of the fairly significant faculty committee discussions in 1994-95
was an inventory of current curricular and pedagogical initiatives by faculty. (Reference: CAP and COG Minutes, 12/94 - 4/95)

This PIC initiative is intentionally focused narrowly, with a well-defined milestone followed by separate deliberation regarding the need for a broad curriculum review once project objectives have been established. In addition, by presenting the Projects Review Initiative as a strategic imperative, PIC recognizes that resources must be made available for faculty release time. The initiative differs from past efforts in this respect.

**SPSC, Task Force, and Other Recommendations**

The preceding PIC Initiative supports the following goals articulated by the SPSC and endorsed by the WPI faculty:

- **Continue to Innovate in our Undergraduate Program**
- **Recognize and Adapt to Continuing Change**

This initiative in and of itself would not directly meet the goals of "Continue to Innovate in our Undergraduate Program" and "Recognize and Adapt to Continuing Change" since it focuses on our existing undergraduate project requirements. The premise of this initiative is that a solid foundation, in the form of objectives and expected outcomes agreed upon by the faculty, must be present before innovations can be made and their effectiveness evaluated.

The PBCL and OAF Task Forces identified the following issues, which provide a context for their recommendations, regarding our current undergraduate program:

- The educational objectives of course work, of project work, and of the unified whole are not clearly formulated or agreed upon by a large portion of the WPI community. (PBCL)
- There is uncertainty with respect to the desired or expected educational outcomes and level of performance of project work. (PBCL)
- We believe there are four basic issues WPI must address to make student performance outcomes work as individual and university-wide assessment tools: (OAF)
  1. Clearly state the expected outcomes of a WPI education in the departmental and university Goals and Mission statements.
  2. Say how these achievements are measured.
  3. Construct an efficient system to record and analyze these measurements.
  4. Use these results of this analysis to continuously improve education at WPI.

Specific Task Force, and other report, recommendations in this area included:
1. That the Institute, via an appropriately selected group, consider the overall intent of its [undergraduate] educational program and that the Institute convey this intent specifically and in detail to the student body via appropriate discussions in the undergraduate catalog and other important means of communication. (PBCL)

2. That the HU/A department clarify the educational objectives of the Sufficiency, and take steps to make these widely known to the WPI community. [Addition from PIC: Faculty from outside HU/A should also be involved in this process.] (PBCL)

3. That the Institute consider the desired educational objectives of the IQP with an eye toward better defining this educational activity. That the Institute define the IQP experience in terms of what the project should be; what the student (and advisor) are expected to achieve and/or gain by doing it; and what acceptable standards for its evaluation are. That appropriate expectations be defined for the IQP. (PBCL)

4. That the Zwiebel Committee objectives for the IQP be explicitly communicated via the Undergraduate catalog. (PBCL)

5. That timely completion of background coursework for the IQP be strongly recommended. (PBCL)

6. That improved training in analytical methods for the IQP be provided. (PBCL)

7. That the college consider developing a course for the first term of the IQP to teach data gathering, analysis, and interpretation and to teach critical thinking about society and technology. (PBCL)

8. That the Institute more clearly define global objectives for the MQP, with a focus on learning outcomes that students may expect to achieve. (PBCL)

9. That steps be taken to improve the written product (of the MQP). (PBCL)

10. That the faculty advisor write and submit a summary evaluation form with each MQP. (PBCL)

11. That the Institute take steps to provide closure in the project experience. (Consider changing traditional project sequence to Suff/MQP/IQP.) (PBCL)

12. That faculty familiarize themselves with the elements of cooperative learning, and teach them as an explicit part of the project. In particular, it is crucial that positive interdependence be created and nurtured in the group experience. (PBCL)

13. That students be encouraged to work in teams where appropriate, and be explicitly taught how to do this effectively. (PBCL)

14. Define appropriate departmental missions congruent with the established WPI mission and goals statements, and that address student outcomes important to WPI. As a university, WPI must adopt guidelines for such mission and outcome statements that are broad enough to allow for different objectives in different programs, but also are uniform throughout WPI and fit ABET’s criteria. (OAF)

15. Make such mission statements amenable to measurement of student outcomes, with efficient procedures to quantify, record, and assess the level of achievement in each measurement for each student. (OAF)

16. Make uniform existing peer review practices for MQP, IQP, and Sufficiency written reports. (OAF)

17. There may be better ways of integrating liberal arts learning truly into the professional lives of WPI students than simply spatulating out 2 units in H & A and 2/3 of a unit to SS. It cannot be demonstrated that the narrow, specialized experience of the H & A Sufficiency has actually led to
Specific Requests
PIC requests assistance from the previous Task Force members based subcommittee with respect to the following:

1. Please review the above draft initiative. Your committee will play an important role in modifying this proposed initiative to address the needs of the WPI campus. This draft is intended to provoke discussion and reflection regarding the future thrusts for WPI and means to implement these goals with the help and within the context of the WPI capital campaign.

2. Please canvas the campus for comment and represent the collective wisdom of all interested parties in constructing your criticism and amendments.

3. Please produce a list of suggestions, by April 13, to be addressed by PIC. This need not be a formal report, but should include background information for each suggested change and an assessment of the campus wide reaction to the initiative that led to the suggested changes. This feedback can take the form of a simple email to the member of PIC coordinating this initiative, or, a new draft of the initiative.

4. Please be prepared to interact with PIC in the preparation of a second version of the initiative in response to feedback received. Also, please be prepared to participate in an open meeting with PIC and the campus community to discuss this second revision.

5. Please assist PIC is the evaluation of the costs of undertaking this initiative. As was explained at the December faculty meeting, the campus will participate in an exercise aimed at capturing the sense of priorities assigned to the various initiatives to be proposed. To conduct this exercise, we need to assign a set of costs to each initiative associated with each kind of resource required by each initiative. Please consider the following questions:
   1. What do you estimate will be the start-up costs of this initiative?
   2. What do you estimate to be the steady state operational costs of this initiative?
   3. What revenue streams, other than the operating budget, can you envision supporting this initiative?
   4. In addition to those ways that might have been suggested above, in what other ways do you imagine this initiative could benefit from the capital campaign?
   5. What space requirements do you think this initiative will need?

Then, please divide the costs into the following categories:

6. One time (start-up phase) cash expenses.
7. Endowed chairs, fellowships and/or scholarships or other self-replenishing funds.
8. Facilities (construction or equipment costs) that might be addressed through a gift-in-kind or gift that targets this project-specific one-time expense.
9. Continuing costs that impact the operating budget.
10. Potential offsets of continuing costs, due to new revenue streams.

Consider the fact that those initiatives that are selected for implementation after campus priorities have been illuminated will have to share the new resources being developed by the capital campaign. These currently untargeted new resources are, conservatively, estimated at approximately $16 million in unrestricted (effectively cash) and $30 million in restricted funds (scholarships, fellowships, chairs and other gifts dedicated to a particular purpose according to the interests of the donator.)