CBC Strategic Plan Report - May 02

Table 2.4. Goal 1: Enhance the Quality of WPI’s Academic Programs

<table>
<thead>
<tr>
<th>Outcome Objectives</th>
<th>Performance Measures</th>
<th>Responsible Parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Fully develop the WPI Plan for all students around an &quot;honors college&quot; metaphor at all levels.</td>
<td>Faculty size; number National Merit Scholars; ranking of undergraduate program; impact of first year; curriculum improvements; graduation rate; practice graduate program statistics; IQP quality; learning outcomes; number large (&gt;35) classes.</td>
<td>Provost's Office; Admissions Office; Faculty Governance.</td>
</tr>
<tr>
<td>1.2 Develop aligned incentives for faculty and staff to promote action plans.</td>
<td>Faculty diversity; faculty and staff salaries compared to benchmarks; employee satisfaction; effectiveness of reward system.</td>
<td>Provost; Director of Human Resources; Assistant VP Student Affairs; Multicultural Awareness Staff Member; Faculty Governance.</td>
</tr>
<tr>
<td>1.3 Provide increasing opportunities for student involvement in research.</td>
<td>Number students in summer research; impact of graduate fellowships.</td>
<td>Associate Provost.</td>
</tr>
<tr>
<td>1.4 Maintain contemporary teaching laboratories.</td>
<td>Adequacy of funding for equipment and instrumentation maintenance and renewal; average age statistics.</td>
<td>Property Administrator; Provost's Office; Dean, Division of Continuing Studies.</td>
</tr>
</tbody>
</table>

Objective 1.1  Fully develop the WPI Plan for all students around an "honors college" metaphor at all levels.

Performance:  
- We have hired 3 new faculty in the past 3 years all with strong/promising research potential which addresses both Goal 1, objective 1.1 (faculty size) and Goal 1 objective 1.3.
opportunities for students in research). Notably CBC is making an effort to hire in two focus areas which impact greatly on the thrust areas outlined in the strategic plan. Thus we hired one faculty member in the area of Biochemistry (Thrust Area- Life Sciences) and we hired two in the area of Molecular Design and Synthesis with specific emphasis on crystal engineering (Thrust Area- Materials)

- We have designed and put in place a term-long research project, The Amino Acid Project, that now serves as the laboratory portion of CH1030. This addresses Goal 1, objective 1.1 (impact of first year, curriculum improvements).

- We have designed and put into place a term-long research project, The Transition Metal Project, that provides the content of CH2670, Experimental 4. This addresses Goal 1, objective 1.1 (curriculum improvements).

- We have redesigned our Undergraduate Project Presentation Day to a poster session which helps to promote interest and involvement by all students and faculty. Previously we ran parallel sessions for chemistry and biochemistry which limited participation by faculty and students. It also limited discussion and presentation of each to only 10-15 minutes. This addresses Goal 1, objective 1.1 (curriculum improvements).

- We now run a graduate student poster session on the same day as Project Presentation Day. The posters are judged and a prize is awarded. It helps to promote interest and involvement by all students and faculty and it contributes to a much richer academic environment. Faculty and students are now much more aware of what is happening in their colleagues' laboratories.

- We have redesigned and implemented our approach to teaching general chemistry, reducing class size from ca. 360 to ca 90 students which addresses Goal 1, objective 1.1 (impact of first year; number large classes)

**Objective 1.2**

*Develop aligned incentives for faculty and staff to promote action plans.*

**Performance:**

- With respect to this goal the department drafted a vision statement and we track our progress in a number of key areas.
A draft version of the tracking document is attached at the end of this report.

**Objective 1.3 Provide increasing opportunities for student involvement in research.**

**Performance:**
- In the last five years at least 22 undergraduate students completed externally funded summer research programs in our department.
- Faculty members like Professor Kris Wobbe and I regularly direct undergraduate research activity in our lab which does not count for credit (non MQP). Professor Wobbe supported and trained 4 undergraduates in her lab this past year and has signed on two for the coming year. I also supported and trained two undergraduates in my lab in the past year. Many of these students come to us under the CBC Scholars program. This is a merit scholarship which is offered to incoming students. The impact is to increase the number and quality of our student body. Over the last four years we have had 18 CBC scholars of which 9 entered in the current year!
- Hughes Proposal- (see below)- A proposal was submitted to the Howard Hughes foundation which fits a number of goals and objectives, including maintaining contemporary research laboratories, providing opportunities for student research, improving the quality and diversity of the student body, supporting research, improving our technical education and expanding our educational resources.

**Objective 1.4 Maintain contemporary teaching laboratories.**

**Performance:**
- We have steadily upgraded equipment in the general chemistry and sophomore labs to provide a contemporary laboratory experience which addresses Goal 1, objective 1.4. This includes investments of over $100,000 in laboratory equipment.
- A proposal to the Howard Hughes foundation was submitted by Professor Wobbe requesting $2,168,000 over four years to do in part extensive laboratory renovation in Goddard Hall and to Salisbury labs.
## Table 2-5. Goal 2: Further WPI's Position as a National University

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<tr>
<th>Outcome Objectives</th>
<th>Performance Measures</th>
<th>Responsible Parties</th>
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</thead>
<tbody>
<tr>
<td>2.1 Improve the quality and diversity of the student body.</td>
<td>Admissions parameters; undergraduate geographic composition; distribution of majors; number applications from independent high schools; percentage minorities and women; percentage of students receiving financial aid.</td>
<td>Admissions Office; Director, Financial Aid; Assistant VP Student Affairs.</td>
</tr>
<tr>
<td>2.2 Support the faculty's efforts in research and scholarship.</td>
<td>Impact of thrust areas on faculty and graduate student recruiting; annual research expenditures; number proposals and awards; number publications; faculty and graduate student support levels; AACSB accreditation status; average course load for faculty; minimum and mean GRE scores; annual number Ph.D. graduates; number full time graduate students; annual research expenditures per faculty member; amount of Indirect Costs recovered.</td>
<td>Associate Provost; Thrust Area Directors; Academic Department Heads; Director, Plant Services.</td>
</tr>
<tr>
<td>2.3 Develop creative partnerships with industry, organizations, and other universities.</td>
<td>Number of partnerships; value added; statistics associated with Silicon Valley center and other new ventures.</td>
<td>Provost Office; Dean, Division of Continuing Studies; VP University Relations.</td>
</tr>
<tr>
<td>2.4 Continue to develop a comprehensive base of programs through aligned resource allocations.</td>
<td>Student participation in humanities and arts programs; status of academic programs; alumni satisfaction with preparation; percentage and average gift value of alumni participation in Annual Fund; endowment per student; payroll per student credit hour delivered.</td>
<td>Provost's Office; Faculty Governance; VP University Relations.</td>
</tr>
<tr>
<td>2.5 Expand opportunities for synchronous and</td>
<td>Number students involved in distance learning; number courses offered; number</td>
<td>Dean, Division of Continuing Studies;</td>
</tr>
</tbody>
</table>
Objective 2.1  Improve the quality and diversity of the student body.

Performance:

- The CBC Scholars program, a merit scholarship which is offered to incoming students was implemented by admissions to increase the number and quality of students selecting a major in chemistry or biochemistry. As a direct result of this program we have attracted at least 18 CBC scholars over the last four years. Interestingly the program is gaining in popularity. Thus of the 18 CBC scholars, 9 entered our program in the current year!

Objective 2.2  Support the faculty's efforts in research and scholarship.

Performance:

- Over $1,000,000 in salary and set up funds have been committed to new faculty in the department over the last four years.

- The graduate student population in the department has increased from 11 in 1997/98 to a current level of 26 and it rose to a level as high as 29 in 2000/01.

- This year only 60% of our graduate students are supported on T.A.'s which is close to our goal of 50%.

- For the first time since I came here in 1985 three different faculty are supporting a total of four graduate students with external funds.

- The number of postdoctoral research associates in the department has risen from 0 in 1996 to at least 3 per year in the department for every year from 1998 to the present.

- The CBC department has graduated four Ph.D. students from 1999-2001 and anticipates three will graduate in the current year.
The number of graduate students signed up for the Ph.D. program in the department is now at least half (10 students).

The number of faculty in the department that are actively submitting proposals continues to be at a high level with 8 submitting in 2001. The number ranges from 6-9 faculty submitting in any given year from 1997-2001.

From 4-6 faculty received at least one grant for each year from 1997-2001.

From 6-10 faculty published at least one paper for each year from 1997-2001.

The department continues to graduate a healthy number of M.S. students with 8 graduating in 1999 and 7 in the year 2000. We anticipate at least five will graduate this year.

Research expenditures range from a low of $163,082 to a high of $632,000 for the period 1996-2001.

Notably although the number of proposals submitted this year is down by about three from last year, the dollars requested was up over $500,000.

Awards received this year were up to $218,498 compared to only $57,000 last year.

Overall the number of proposals submitted by the department has increased greatly. Thus in the three year period 1996-1998 approximately 30 proposals were submitted compared to 77 in the three year period 1999-2001.

**Objective 2.3**

*Develop creative partnerships with industry, organizations, and other universities.*

**Performance:**

- Over $340,000 in funding over the last four years from Bayer Business Group Diagnostics for support of research, graduate students and postdoctoral research associates in Prof. McGimpsey's laboratory.

- Over $200,000 in funding from BASF Bioresearch for support of research in Professor Dittami's lab.

- Over $200,000 in funding since 1996 from Pfizer for the support of graduate students in chemistry (two which were in Professor Dittami's lab).
• Over $100,000 in funding from Pfizer and from Pharmacia & Upjohn since 1996 for the support of undergraduate research both in the summer and during the academic year.

• An Organic Synthesis Symposium series was started in about the last three years with funding from both the American Chemical Society Petroleum Research Fund and Organic Syntheses (a professional publication).

Objective 2.4  
Continue to develop a comprehensive base of programs through aligned resource allocations.

Performance: None.

Objective 2.5  
Expand opportunities for synchronous and asynchronous networked learning.

Performance: None.

Objective 2.6  
Conduct a comprehensive image-building and marketing effort.

Performance:

• Our biochemistry laboratory and Professor Kristin Wobbe were featured in the most recent WPI television advertisement.

• Faculty in CBC and BBT hosted the Northeast Regional Meeting of the American Society for Plant Physiology here at WPI in May 01. This was an excellent opportunity to display our research activity and the benefits of our campus. In addition, we invited several internationally known scientists to our campus to give the symposium addresses. We send a number of graduate and undergraduate students to this meeting every year. This year, two undergraduates and five graduate students from the CBC department attended presenting four posters.

Table 2 6. Goal 3: Establish WPI as a Leader in Global Technological Education

<table>
<thead>
<tr>
<th>Outcome Objectives</th>
<th>Performance Measures</th>
<th>Responsible Parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Expand participation by students and faculty in the Global Perspective Program.</td>
<td>Dollar value of scholarship fund; faculty involvement; number projects conducted at global sites; number faculty and students</td>
<td>VP University Relations; Provost's Office; Faculty Governance, Dean,</td>
</tr>
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</table>
involved with sister institutions. IGSD.

3.2 Make the transition from multinational sites to a global system.

<table>
<thead>
<tr>
<th>Objective 3.1</th>
<th>Expand participation by students and faculty in the Global Perspective Program.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>None.</td>
</tr>
</tbody>
</table>

**Objective 3.2** Make the transition from multinational sites to a global system.

| Performance | None. |

**Table 2. Goal 4: Improve WPI’s Campus Culture and Community Presence**

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<tr>
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<th>Performance Measures</th>
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</tr>
</thead>
<tbody>
<tr>
<td>4.1 Construct and renovate facilities to accommodate social and academic activities and solve the parking problem.</td>
<td>Funds available; adherence to construction timetable.</td>
<td>VP University Relations; Assistant VP Student Affairs; VP Administration; Director, Plant Services.</td>
</tr>
<tr>
<td>4.2 Improve ethnic and gender diversity in our community.</td>
<td>Quality of life on campus; role and value of support groups.</td>
<td>VP Student Affairs; Assistant VP Student Affairs; Multicultural Awareness Staff Member.</td>
</tr>
<tr>
<td>4.3 Provide a safe environment for our community that fosters learning and development with appropriate alternatives to alcohol and drug abuse.</td>
<td>Safety statistics; number violations of alcohol and drug policies; results of CORE Alcohol and Other Drug National Survey; results from Higher Education Research Institute National Survey.</td>
<td>Director Public Safety; Campus Safety Officer; Assistant VP Student Affairs; Healthy Alternatives Office.</td>
</tr>
<tr>
<td>Objective 4.1</td>
<td>Construct and renovate facilities to accommodate social and academic activities and solve the parking problem.</td>
<td></td>
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</tr>
<tr>
<td>Performance:</td>
<td>None.</td>
<td></td>
</tr>
</tbody>
</table>

**Objective 4.2**  
*Improve ethnic and gender diversity in our community.*

**Performance:**  
None.

**Objective 4.3**  
*Provide a safe environment for our community that fosters learning and development with appropriate alternatives to alcohol and drug abuse.*

**Performance:**  
None.
Objective 4.4  Expand efforts to meet the needs of adult learners.

Performance: None.

Objective 4.5  Enhance the Career Development Center.

Performance: None.

Objective 4.6  Maintain facilities and surrounding peripheral properties according to master plan.

Performance: None.

Objective 4.7  Enhance support for K-12 system and the local community.

Performance: None.

Table 28. Goal 5: Expand WPI's Educational Resources

<table>
<thead>
<tr>
<th>Outcome Objectives</th>
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<th>Responsible Parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Improve library resources, services, and facilities</td>
<td>Relocation of Mass Academy; library budget constraints; number projects involving digital library; off-campus usage statistics.</td>
<td>Associate Provost; Director, Gordon Library; VP University Relations; Director, Plant Services; Faculty Governance; VP Information Technology.</td>
</tr>
<tr>
<td>5.2 Establish state-of-the-art computing resources and network performance</td>
<td>Network capacity; internet usage statistics; modes of off-campus access; state of computer laboratories and central servers.</td>
<td>VP Information Technology; VP University Relations; Provost's Office.</td>
</tr>
<tr>
<td>5.3 Create and maintain sufficient electronic classrooms to support on- and off-campus programs.</td>
<td>Usage rate of IT in classes; state of electronic classrooms; notebook computer usage rates.</td>
<td>Director Plant Services; Director, Instructional Media Center; Provost's Office; Director, CEDTA.</td>
</tr>
</tbody>
</table>
Objective 5.1  Improve library resources, services, and facilities.
Performance:  None.

Objective 5.2  Establish state-of-the-art computing resources and network performance.
Performance:  None.

Objective 5.3  Create and maintain sufficient electronic classrooms to support on- and off-campus programs.
Performance:  None.