Progress Report of Environmental Science Program
(Academic Program Review: Cycle Five)

June 7, 2005

Unit Review Committee: Judith Bramble, Liam Heneghan, Ulrich Kamp, James Montgomery (Program Director), Kenshu Shimada (Committee Chair), and Margaret Workman

Background

In June of 2003, the Environmental Science Program (ESP) made commitments to its university, DePaul University, to comply with the Memorandum of Agreement (MOA) generated through Cycle 5 (Spring 2002 - Spring 2003) of Academic Program Review (APR). When the original APR report and MOA were submitted to the University’s APR Committee (APRC), the APR Unit Committee (ESP) consisted of Nancy Clum, Liam Heneghan, James Montgomery, Thomas Murphy, Kenshu Shimada, and Margaret Workman. Since then the members of the unit committee have changed. The present unit committee consists of Judith Bramble, Liam Heneghan, Ulrich Kamp, James Montgomery, Kenshu Shimada, and Margaret Workman. In report we discuss the ESP’s progress on the items listed in the MOA.

I. Common actions agreed upon for the sciences at DePaul (as applicable):

1. Graduate Stipends

Issue: The Dean of the College of Liberal Arts and Sciences acknowledges that current graduate stipends in the sciences are less than what is offered at comparable institutions and has made a commitment to make progress toward equity in this matter. Hence, an increase for stipends has been included in the budget for the coming academic year. However, for the long term, departments should consider alternatives to handling graduate assistant responsibilities such as lab staffing. Both sides agreed to continue
discussions regarding alternative strategies in this matter within the larger context of the roles of the Masters Science programs at DePaul.

**ESP’s achievements:** This issue is not applicable to the ESP since we do not have a graduate program.

### 2. Science Facilities

**Issue:** The Dean of the College of Liberal Arts and Sciences and the EVP for Academic Affairs commit to being advocates for the sciences and science facilities at DePaul. Furthermore, they ask to be kept aware of the changing and upcoming needs of the science departments as they become apparent including: changes in curriculum, concentrations, and technology. Knowledge of emerging developments in the field will then allow the institution to better situate itself for the future.

**ESP’s achievements:** There are two issues that need immediate attention by the Dean and the Executive Vice President for Academic Affairs. First, the ESP is in the early stages of developing a graduate MS program in environmental science, with particular emphasis on restoration and landscape ecology. This program will be the first MS degree program specifically in environmental science in the Chicagoland area, and it we anticipate that will draw students from a variety of backgrounds who desire a science-based MS degree in a field-based science. The anticipated MS curriculum places heavy emphasis on field work. The keystone of this graduate program will be an intensive field course focused on various aspects of ecosystem and landscape ecology. The ESP, in conjunction with the McHenry County Conservation District, is proposing to institute a summer program offering field-based ecology courses for college credit. Its purpose is to allow students with an ecology and environmental science background to complement their classroom studies with field-based experimental studies. The program will be located at the 3,000-acre Glacial Park Nature Preserve in McHenry County, Illinois. Glacial Park would essentially be used as a permanent ecological field station. Buildings currently on the site could provide lodging, classroom and laboratory space for the program and its participants. The program will be open to students from DePaul and other universities. It
will be administered by the ESP. While most of the courses will have a classroom component, the majority of the student’s time will be spent on experiments and projects in the field. We would like the Dean and Executive Vice President of Academic Affairs to assist us in working with the Development Office to raise funds to support the field station.

A second and quite pressing issue is the lack of sufficient storage space in McGowan Science Building (where the ESP resides) to store equipment and supplies. As the faculties of the Department of Biological Sciences and ESP have grown, available storage space has been gobbled up. The ESP in particular does a yearly inventory and retires any equipment not being used, and so we feel we maximize our available space. However, with the recent addition of Judy Bramble from Barat College of DePaul, and the imminent arrival of our new faculty hire, Sarah Richardson, both of whom will be bringing equipment with them and purchasing new equipment, it is paramount that the College and University administration address this issue. Can we use space in other buildings, notably the Physical Plant facility on Fullerton across from the Richardson Library, to store equipment? Given Peter Bataskis’ (DePaul’s Occupational Safety Officer) heavy emphasis on insuring and enforcing occupational, environmental and health safety (Safety and Health Administration [OSHA] and the Environmental Protection Agency [EPA]), it is paramount that this issue be addressed sooner rather than later.

3. Transitional Masters Program Initiative

**Issue:** Academic Affairs and the Dean of Liberal Arts and Sciences agree to continue support of the transitional Masters program being piloted with Xavier University-New Orleans. The College of Liberal Arts and Sciences, Academic Affairs, and the science units agree to search for funding to support students brought in through this initiative without decreasing funds to existing graduate students.

**ESP’s achievements:** This issue is not applicable to the ESP, because the ESP currently does not have a graduate program.
4. Freshman Sequencing Flexibility

**Issue:** The Dean of the College of Liberal Arts and Sciences and the EVP for Academic Affairs strongly support efforts by the sciences to create flexible entry points into their programs. Actions including the reorganization of courses, the staggering of introductory sequences, and scheduling cooperation within the sciences and mathematics departments are all endorsed as ways to encourage student enrollment.

**ESP’s achievements:** Ideally all ESP students take the general biology and general chemistry sequence courses during their first year so that they can gain sufficient knowledge to take ESP courses and other more advanced science courses in the second year. As such, the ESP pointed out in its original APR report that the issue of flexible entry points into the major cannot be resolved unless each of those introductory sequence courses (which are run by other science departments, and hence not under the ESP’s control) is offered more frequently. To partially solve the problem, the Department of Chemistry (DOC) has developed a two-quarter General Chemistry sequence (CHE 131-133), while at the same time continuing to offer their established three-quarter sequence (CHE 111, 113, and 115). The DOC offered CHE 131-133 during Winter and Spring 2005 quarters for the first time. Two ESP students enrolled in this sequence, so we cannot say with any degree of certainty just how effective the sequence is in terms of creating flexible entry into the ESP. In addition, the Department of Biological Sciences will be offering Ecology (BIO 215) in Spring 2006. This is a sophomore-level course normally offered only in the Autumn quarter, and it is a core course for all ESP majors. The offering of this course in the Spring quarter is expected to create curricular flexibility for current and prospective ESP students.
5. Formal Evaluation of Terminal Masters Programs

**Issue:** The Dean of the College of Liberal Arts and Sciences and the EVP for Academic Affairs encourage the science departments that offer terminal graduate degrees to evaluate these programs in terms of the quality of educational experience provided, satisfaction with student applicants, roles the program currently fulfills, future expectations of the programs and ways to achieve these goals. The Dean of the College of Liberal Arts and Sciences and the sciences agree to continue discussions regarding future directions for these programs where applicable.

**ESP’s achievements:** This issue is not applicable to the ESP, because the ESP currently does not have a graduate program.

II. Actions that the Environmental Sciences Program agrees to address during the coming academic year:

1. Evaluation of Curriculum

   **Issue:** The Environmental Sciences Program will continue to evaluate the effectiveness of its curriculum with the assistance of the Office of Teaching, Learning, and Assessment (OTLA) and the annual assessment of student work conducted for this office. Possibilities in the coming year include 1) consistency of ESP coursework with the Program’s stated Learning Goals, 2) an assessment of student products to evaluate levels of environmental literacy after the required three-course sophomore sequence (BIO 215, ENV 216, ENV 217), and 3) the effectiveness of the new thesis requirement.

   **ESP’s achievements:** The Environmental Science Program values the assessment exercise, and we are committed to developing strong assessment projects and incorporating the findings in our curriculum. Since the ESP signed its MOA, two annual assessment project reports, 2004 and 2005 reports, have been generated by the ESP and submitted to OTLA. The 2004 report focused on the effectiveness of the new senior thesis requirement.
(i.e., Possibility #3 raised in the MOA by the APRC) and consisted of a critical reading and evaluation of theses completed by students in the past two years, as well as interviews with students who have recently completed or are in the process of completing their theses to gauge their feelings about the usefulness of the thesis requirement in preparing them for their post-baccalaureate endeavors. Results of this assessment indicated that many students were/are confused and frustrated as to what the ESP expects/ed of them with respect to completing the thesis requirement, and that the ESP needs to develop a clear set of written expectations and guidelines for the students to follow as they plan, execute and write their thesis. As a result, Kenshu Shimada and Ulrich Kamp generated thesis guidelines. These were presented to ESP majors at the ESP Student Symposium in Autumn 2004.

For the past several years, the ESP assessment projects paid particular attention to the ESP majors and their courses/requirements/performance, hence, assessment of our Liberal Studies SID courses was long over due. In Spring 2004 the Environmental Science Program developed learning goals for our Liberal Studies Scientific Inquiry Domain classes. One of the learning goals for the Introduction to Environmental Science (ENV 102), which impacts a large number of students (approximately 60 non-science majors per quarter), demands that students apply methods of modern science to a real environmental issue in the laboratory. This learning goal also reflect one of the goals set forth by the Scientific Inquiry Domain. The development of this leaning goal prompted the ESP to investigate the students’ ability to able to apply methods of modern science to a real environmental issue in the laboratory. As part of its 2004-2005 assessment project, Margaret Workman and Ulrich Kamp analyzed 180 ENV 102 students’ work compiled over three academic quarters. Their analysis showed that students’ perception of their scientific abilities were always much greater than their demonstrated ability. Workman and Kamp proposed possible strategies to improve students’ abilities to apply the methods of modern science. The ESP faculty will discuss this issue in more depth at our AQ 2005 Fall Faculty Retreat.
2. Career Advising/Post-Baccalaureate Assistance

**Issue:** The program shall increase its assistance to students in matters of career/post baccalaureate planning including working with the Career Center to arrange for professionals in environmental science fields to speak to students at an annual symposium sponsored by the program and at career fairs about ways for students to apply their degrees. Additionally, the Environmental Science Program will assist students with issues related to applying for jobs/graduate school programs.

**ESP’s achievements: The ESP has made** significant progress on this issue. Following are our accomplishments:

1) Developed senior thesis guidelines for ESP (completed in Autumn 2004);
2) Organized Annual ESP Student Orientation (Autumn 2003; Autumn 2004);
3) Organized Annual ESP Student Symposium (Spring 2004; expected Spring 2005);
4) Held a workshop on “How to develop a strong resume” for ESP students (Autumn 2004);
5) Held a workshop on “How to enhance your interview skills” for ESP students (Spring 2005);
6) Held a workshop on “How to prepare for the GRE and the graduate school application” (Winter 2004);
7) Created a career advising section to the ESP library with the materials from the three aforementioned career advising workshops that were held;
8) Frequently e-mailed ESP students about internships and other job opportunities as well as about career fairs and workshops;
9) Use of ESP bulletin board to post information regarding graduate schools, job/internship opportunities, career fairs, and workshops; and
10) Provided logistical support to Illinois Association of Environmental Professionals for participating its annual environmental conferences (April 30, 2005).
3. Curricular Offerings

**Issue:** The program will expand its course offerings to majors within the program and also its service courses primarily intended for non-majors. The expansion of courses will enhance the attractiveness of the program to new and existing students, as new courses will provide a greater variety of courses for students to choose from. Additionally, the program will be able to take advantage of the interests and abilities of faculty from the other science departments and the Department of Geography, and potentially increase the diversity of faculty teaching Environmental Science Program courses.

**ESP’s achievements:** The ESP is making steady progress regarding this issue. First, the ESP has begun work to develop “Environmental Education” as one of its “Areas of Concentration” for majors, and it is anticipated that the proposal creating this new area will be approved by the LAS Curriculum Committee in Autumn 2005. Second, the following three ESP courses were developed for ESP majors: 1) “Global Climate Change” (ENV 230) offered by Ulrich Kamp in Spring 2003, Spring 2004, and Spring 2005, as one of the Geography emphasis courses; 2) “Restoration Ecology” (ENV 390) offered by Marshall Eames (VAP) in Autumn 2004; and 3) “Environmental Data Analysis” (ENV 260) offered by David Jabon (SDAV) in Spring 2002, Spring 2004, and Spring 2005. In addition, the SDAV is currently (Spring 2005) offering for the first time a new course, “Environmental Modeling” (SDV 310) that particularly targeted ESP students. Furthermore, two courses in plant identification and plant ecology for ESP majors are currently being developed by our new faculty member, Sarah Richardson, who will be joining the ESP in Autumn 2005. Third, the following courses were developed for non-majors: 1) “Natural History in Chicago” for freshmen (ISP 102: developed by Kenshu Shimada; offered by Kenshu Shimada in Autumn 2003, and by Liam Heneghan in Autumn 2004, expected Autumn 2005); 2) “The Earth through Time” for non-science majors (ENV 117), developed by Kenshu Shimada, and 3) Energy and the Environment, ENV 2XX, developed by Margaret Workman. The proposal for this course is currently under review by the SID committee.
4. Recruitment of Majors: The Environmental Science Program will increase its recruiting efforts in several ways.

**Issue “a”:** Marketing within DePaul University by offering general education courses that are interesting and attractive to potential students already at DePaul.

**ESP’s achievements:** Some Liberal Studies and First Year Program courses were either offered or established in order to attract “undecided students.” They include: 1) “Natural History in Chicago” for freshmen (ISP 102: a new Explore Chicago course developed by Kenshu Shimada; offered in Autumn 2003); 2) “Global Climatic Change” (ENV 230; a new SID course developed by Ulrich Kamp; offered in Spring 2003, Spring 2004, and Spring 2005); 3) “The Earth through Time” for non-science majors (ENV 117: a new SID course developed by Kenshu Shimada; offering pending); and 4) “Energy and the Environment” (a new SID course proposed by Margaret Workman; currently under review by the SID committee). In addition, we are developing a new SID-Quantitative course, ENV 101, that will cover the same material covered in our large ENV 102 course (SID-Quant/Lab), but without the lab component.

**Issue “b”:** Enhancing its website.

**ESP’s achievements:** From time to time the ESP has updated its website, most notably its course schedules for the academic year. We also add announcements for special events, as well as employment opportunities. Most recently Ulrich Kamp has been working closely with Linda Greco (Publication and Web Manager in the LA&S Dean's Office) to develop a new ESP home page. Each ESP faculty member will have their own webpage, and the overall website will be more attractive looking, functional and user-friendly. We anticipate that this project will be finished by the end of 2005.
Issue “c”: Working with community colleges offering coursework in environmental science to recruit students interested in pursuing bachelor degrees in this field.

ESP’s achievements: In order to promote our program to diverse groups of people, including Chicagoland community college students, the ESP has developed an attractive promotional brochure. The brochure is currently being professionally printed, and once the prints become available to us, we will send copies to all Chicagoland community colleges that offer some type of science curriculum.

Issue “d”: Targeting high school students.

ESP’s achievements: The ESP has made a significant progress in regards to this issue. The ESP’s efforts and activities towards the goal include:

1) Staffing an information desk for “DePaul University Visit Day” (Winter 2004; Winter 2005)
2) Staffing an information desk for “Preview DePaul” (Spring 2004; Spring 2005);
3) Participating in “Science, Math, and Technology Day” (Autumn 2003; Autumn 2004);
4) Participating in the December 2004 “Counselor Articulation Board” (December 2004);
5) Jim Montgomery has collaborated with students from Lincoln Park, Walter Payton, and Mother Theodore Guerin High Schools on science fair projects. In addition Jim is currently teaching a course called “Hands-On Environmental Science” for academically advanced 7th and 8th graders at Oscar Mayer Elementary School.

Issue “e”: Working with the other sciences, Math, and also the Interdisciplinary Science and Technology Center and NASA Center to collectively develop recruitment strategies.

ESP’s achievements: Two faculty members of the ESP, Ulrich Kamp and Kenshu Shimada, have been actively involved in the Marketing Subcommittee of “Strengthening the Sciences at DePaul University” Committee. The Marketing Subcommittee has determined that the publicity of DePaul’s science programs is the key to the success in recruitment, and thus held “Natural Sciences, Mathematics, and Technology Showcase” in the Schmitt Academic Center in the Autumn Quarter of 2003 and 2004. ESP students, staff, and faculty participated in the event by presenting several student-led research posters.
5. Possible Post-Baccalaureate Certificate or Master’s of Science Program

**Issue:** The Environmental Science Program will investigate if it is academically and financially viable to pursue a Master’s degree in restoration ecology, a post-baccalaureate professional certification program in wetlands delineation. The ESP will submit a proposal to the Dean of the College of Liberal Arts and Sciences identifying potential audiences including the skills necessary to enter the program and ways in which students will be able to supplement their existing abilities in order to succeed in the program.

**ESP’s achievements:** In December of 2004, ESP faculty met to discuss the development of a graduate program in Environmental Science. The strengths and weaknesses of the ESP were identified in order to determine the possible focus of the graduate program. The results suggested that field-based ecology, particularly restoration ecology and landscape ecology, is likely to play an important role to the graduate program. However, further discussions were hampered by the fact that one of the only two field-based ecologists in the ESP, Nancy Clum, resigned in 2004. In 2004-2005 Academic Year, the ESP launched a national search to fill Clum’s position. In August 2005 we will welcome Dr. Sarah Richardson, a field-based plant ecologist, to the ESP. We will resume our discussion of all post-baccalaureate programs upon her arrival.

Judy Bramble has begun identifying courses for a post-baccalaureate degree program in environmental education, including the possibility of a 5-year joint B.A./M.S. degree program. Students interested in teaching environmental science in middle or high school would receive a B.A. in environmental science and a M.S. in education. The ESP will be working with representatives of the School of Education to discuss various options for attracting SOE students to environmental education.
6. Diversity

**Issue:** The Environmental Sciences Program remains committed to the recruitment of a diverse student body within its program and a diverse faculty.

**ESP’s achievements:** We obtained the most recent data on the racial/ethnic composition of the ESP from Joe Filkins the Office of Institutional Planning and Research (OIPR). We examine the trends in the data over the last three years, spanning from Autumn 2002 (when the original APR report was put together) to Autumn 2004 (Table 1).

**Table 1.** Racial/ethnic composition of the ESP for the last three years. Whole numbers = actual number of students; numbers in parentheses = percentage of students compared to other categories.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Autumn 2002</th>
<th>Autumn 2003</th>
<th>Autumn 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>African American</td>
<td>1 (4%)</td>
<td>1 (4.5%)</td>
<td>1 (3.1%)</td>
</tr>
<tr>
<td>Asian-Pacific</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (3.1%)</td>
</tr>
<tr>
<td>Latino</td>
<td>1 (4%)</td>
<td>3 (13.6%)</td>
<td>5 (15.6%)</td>
</tr>
<tr>
<td>White</td>
<td>20 (80%)</td>
<td>16 (72.7%)</td>
<td>23 (71.9%)</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>3 (12%)</td>
<td>2 (9.1%)</td>
<td>2 (6.3%)</td>
</tr>
<tr>
<td><strong>Total number of students</strong></td>
<td><strong>25</strong></td>
<td><strong>22</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

Table 1 shows that the total number of declared ESP majors has increased from 25 students to 32 students. While the number of “Other/Unknown” students has remained relatively consistent (2–3 students), the “White” population has increased from 20 students to 23 students. However, this increase is deceptive, and it is particularly noteworthy that the overall percentage for “White” has decreased from 80% to 72% over the last three years. This decrease is due to the increase in “Latino” population (from 1 student to 5 students) and the addition of one “Asian-Pacific” student. Although the reasons behind the obvious increase in “non-White” students are uncertain, we celebrate the increased diversity and will continue efforts to diversity our student population.
This past year the ESP conducted a nationwide search to fill Nancy Clum’s vacated position. Although the search resulted in the hiring of a Caucasian female (Dr. Sarah Richardson), the ESP worked with Elizabeth Ortiz in the Diversity Office to carefully craft a job description that would potentially attract minority candidates, and to distribute the description to academic job search websites targeted toward minority candidates.

7. Teacher Preparation

**Issue:** The ESP is open to continuing conversations with the Dean of the College of Arts and Sciences with regard to offering programs for the training or re-certification of K-12 teachers in the area of environmental science. The ESP will look into this area when investigating possible post-baccalaureate programs.

**ESP’s achievements:** Upon the university’s decision to close the Barat Campus, one of its science faculty members, Judith Bramble, accepted an offer to join the ESP. She has been working closely with the School of Education (SOE) to improve the training of K-12 teachers. By the end of Autumn 2005, the ESP will work with science education representatives from the SOE to finalize the coursework needed for SOE students, both undergraduate and graduate, to meet the new Illinois Environmental Science content area standards in secondary science education. Judy is also participating in a SOE initiative, funded by the Chicago Community Trust, during summer 2005, where she will serve as a science faculty liaison to the SOE’s Professional Development Schools (PDS) to help PDS teachers identify potential science topic areas for further exploration in their classrooms with their students. In addition, Jim Montgomery and Judy Bramble will be participating in the implementation of the new LA&S Master’s in Science Education, coordinated by Lynn Narasimhan in ITSC.