Undergraduate PIRE Program (UPP) Down Under

2016 UPP Program

12 undergraduates participated in the Summer 2016 UPP Down Under Program held at UC Irvine and University of Melbourne in Australia.

◊ UCI Weeks 1-2: Student Orientation, field trips, & lectures
◊ Australia Weeks 3-4: Tours of facilities & experiments on biofilter performance
◊ UCI Weeks 5-6: Lectures, data analysis, group work, & student presentations

2016 Achievement of Project Goals

Students had statistically significant increases in their knowledge, career interest, understanding of interdisciplinary approaches, and their desire to collaborate and actual collaborations. After UPP, all but one student were interested in a water sustainability career.

Goal 1: Knowledge/Research

<table>
<thead>
<tr>
<th>Before UPP</th>
<th>After UPP</th>
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</thead>
<tbody>
<tr>
<td>Knowledge/Research</td>
<td>2.39</td>
</tr>
</tbody>
</table>

11 students gained field and technical skills
7 gained communication skills
2 gained leadership skills

Goal 2: Education/workforce development

<table>
<thead>
<tr>
<th>Before UPP</th>
<th>After UPP</th>
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</thead>
<tbody>
<tr>
<td>Career Interest</td>
<td>3.33</td>
</tr>
<tr>
<td>Understanding of Interdisciplinary approaches</td>
<td>2.97</td>
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</tbody>
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10 students shared that interdisciplinary research offered a new or different perspective

Goal 3: Partnerships

<table>
<thead>
<tr>
<th>Before UPP</th>
<th>After UPP</th>
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</thead>
<tbody>
<tr>
<td>Desire to collaborate</td>
<td>3.33</td>
</tr>
<tr>
<td>Actual collaborations</td>
<td>2.17</td>
</tr>
</tbody>
</table>

7 students developed partnerships with US and Australian researchers

Mentorship in 2016

Students shared that mentorship by faculty and postdoctoral fellows was an important part of the UPP program because they:

Gained: career advice, research training
Felt mentors were: approachable, supportive

7 mentioned mentorship was the most rewarding aspect of UPP

Usefulness of 2016 Activities

Students rated lectures and tours as very or extremely useful, but rated them higher during weeks 1&2 than the later weeks. Tours were rated higher than lectures because students were interested in the practical application of the lecture topics.

“I’d want to stay Environmental Engineering, go to grad school and then career. I was 50/50 before, but now I know I want to go to grad school.” - 2016 UPP Participant

Check out our Water-PIRE YouTube video, “Every last drop”
Follow-up Surveys with 2013-15 UPP Participants

A follow-up survey was sent to all past UPP participants (n=36). Twenty-three (64%) completed the follow-up survey. Respondents were 6% female, 43% Asian, 57% from UCI, 48% environmental engineering students, and 39% from the 2015 cohort.

Knowledge Application

Knowledge and skills gained from UPP are being retained and put to use.

- **55%**
  - Used the knowledge & skills in research projects
    “Lab research experience relevant to current research skill requirements. Understanding of current issues and leading initiatives helped focus my career goals. International experience and understanding of Australia’s response to millennial drought relevant in current drought discussions.”

- **27%**
  - Used the knowledge & skills at work/fellowship/internship
    “The knowledge and skills I gained in UPP helped me get my internship after college and at my current job I may be able to use the skills in the water quality division.”

- **18%**
  - Found the knowledge & skills generally useful
    “Better understanding of what is involved in high-level research, ability to interact professionally with my peers, more global understanding of environmental issues.”

Education and Workforce Development

Past participants stayed engaged with water-related activities, schooling, and careers.

- **86%**
  - Water- and engineering-related activities in the past year:
    8 participated in an internship
    5 presented research
    1 involved in a publication
    9 participated in solving urban water sustainability problems

- **91%**
  - 21 out of 23 past participants’ long-term career plans are in a water-related field or engineering

Personal and Professional Development

Past participants indicated that UPP impacted them personally and professionally. The 2015 cohort indicated that the most valuable aspects of UPP were the networking opportunities and the knowledge they gained.

18 shared personal and professional impacts of UPP:
- 2 gained skills related to their current fields
- 7 networked and collaborated with researchers and students
- 4 had increased confidence
- 2 gained international experience
- 2 had increased understanding of water sustainability
- 1 learned more about academia

9 from the 2015 cohort shared the most valuable aspect of UPP:
- 4 stated networking opportunities
- 3 stated increased interest in water sustainability field, grad school, or career
- 2 stated knowledge they gained

“UPP showed me the bigger picture of urban water sustainability and made me excited about being part of California’s solution.” -Past UPP Participant

“This project has given me connections to other students, faculty, and post-docs that have been a great support network. UPP opened the door for me to go to graduate school and gave me a unique research experience that I continue to talk about and draw on.” -Past UPP Participant

Evaluator’s Recommendations

- **Provide opportunities** for students to talk to and possibly conduct research with Australian partners during and after UPP Down Under.
- **Facilitate research and presentation opportunities** after UPP Down Under to help students stay connected to UCI and water-related research/work.
- **Stay connected** to all past UPP Down Under students to track their retention in water-related academic and career paths and activities.