WPI PhD Plan

Terri A. Camesano and Michael McGrade

Some data and slides courtesy of GQP group advised by Sharon Wulf: David Fogaren, Julienne Labrecque, Marjorie Miller, Stephanie Pals Papia, Charles Prescott

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Over past six years WPI has expanded degree offerings for PhD candidates as well as number of students.

2015
Twenty one disciplines
340 current students

What’s missing in the PhD?

“If graduate students are considered to be trainees...everyone involved should make sure that their training is valuable to both society and the students. Graduate school is currently a research experience that is intellectually stimulating but not a clear stepping stone towards any career path.” --- Jessica Polka, Postdoctoral research fellow at Harvard Medical School*

WPI PhD Plan

• **Core Implementation Team Selected**
  – 2 Leads (Camesano / McGrade)
  – 13 Members

• **Individual Development Plans**
  – 4 pilot groups identified
  – Common set of core competences
  – Build leaders
  – Enhances skill sets of students needed for post graduation
  – Empower inward reflection and action on developing
# Competitive Analysis

<table>
<thead>
<tr>
<th>WPI</th>
<th>Cornell</th>
<th>Stanford</th>
<th>University of California, Davis</th>
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<tbody>
<tr>
<td>Communication</td>
<td>Communication</td>
<td>Communication</td>
<td>Writing and Publishing</td>
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<td>Pedagogy</td>
<td>Teaching</td>
<td>Teaching</td>
<td>Presentation Skills</td>
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<td>Interdisciplinary thinking</td>
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<td>Ethics</td>
<td>Responsible Conduct of Research</td>
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<td>Scholarly Integrity and Professionalism</td>
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<td>Personal-Professional Balance</td>
<td>Personal Development</td>
<td>Personal Development</td>
<td>Wellness and Life Balance</td>
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<td>Leadership Skills</td>
<td>Leadership and Management</td>
<td>Leadership and Management</td>
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<td>Global Mindset</td>
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<tr>
<td>Off-Campus Experience</td>
<td>Career Development</td>
<td>Career Development</td>
<td>Career Exploration, Job Searching, and Networking</td>
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<td></td>
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<td>Specialized Content and Skills</td>
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WPI PhD Plan

• Elevate and make more distinctive our university’s doctoral programs

• Pilot program to extend a competitive advantage to our graduate students by providing a host of opportunities

• Goals by 2018
  – Establish Individual Development Plans for all PhD students
  – Launch a Center for Graduate Professional Development to offer professional and career-enhancing opportunities
  – Offer PhD students opportunity to participate in global and industrial experiences (target 20%)
  – Launch at least 2 interdisciplinary PhD programs in areas aligned with strategic plan
PhD Plan- Faculty and Staff Teams

• **Core Implementation Team:** Maggie Becker, Terri Camesano, Luca Capogna, Tanja Dominko, Michael McGrade, Sia Najafi, Dave Ortendahl, Jessica O’Toole, Amy Peterson, Reeta Prusty Rao, Susan Roberts, Aaron Sakulich, Deb Scott, Sharon Wulf, Alex Wyglinski

• Additional faculty engaged for specific initiatives: Aaron Deskins, David DiBiasio, Jianyu Liang, Balaji Panchapakesan, Liz Ryder, Marsha Rolle, Rick Sisson

• GQP group advised by Sharon Wulf: David Fogaren, Julienne Labrecque, Marjorie Miller, Stephanie Pals Papia, Charles Prescott
Pilot Groups Going Forward

• Individual Development Plans
  – Biomedical Engineering (Marsha Rolle)
  – Chemical Engineering (Amy Peterson and Sue Roberts)
  – Bioinformatics and Computational Biology (Liz Ryder)
  – Materials Science (Rick Sisson)

• Internships
  – Building on efforts of ECE (Alex Wyglinski) and Math (Luca Capogna), CEE (Aaron Sakulich) and ChE (Sue Roberts)
  – In the process of collecting data from faculty and students to guide and support this effort
  – CDC is on board to support
PhD Student Survey

- Students Surveyed 323
- Student Responses 53
- 16% Response Rate
Majority of participants, 84%, seek careers in research or academia.
PhD Placements

Students who began their PhD programs in fall 2001 through fall 2013

<table>
<thead>
<tr>
<th>Sector</th>
<th>Staff</th>
<th>Post-doc</th>
<th>Total</th>
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<tbody>
<tr>
<td>Academic</td>
<td>62</td>
<td>31</td>
<td>93</td>
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<tr>
<td>Industry</td>
<td>131</td>
<td>4</td>
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<tr>
<td>Government</td>
<td>13</td>
<td>3</td>
<td>16</td>
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<tr>
<td>Unknown</td>
<td>9</td>
<td>0</td>
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<tr>
<td>TOTAL</td>
<td>215</td>
<td>38</td>
<td>253</td>
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</table>
**Academia**

**Why are you choosing a career in teaching?**
- Because I love teaching!
- I enjoy teaching
- It’s what I’m used to and I think educating the next generations of utmost importance
- Personal interest
- I like teaching

**What could WPI do to better prepare you?**
- Provide more TA opportunities
- Better mentoring, more defined outline for graduation and thesis requirements
- Provide more teaching opportunities
- More collaboration program with departments in other universities
- Provide a better structured TA system
• Out of 30 responses
• 67% would take 1 to 2 hours a week to develop personal skills
• 50% of participants have taken gone to a development seminar
Industry

- Nearly 30% of the group surveyed felt they were not prepared to work in industry

What is the program lacking?

- Internship experiences
- Very academia-centered program. Industrial terms not taught, nor profit trends, or how to create and meet timelines
- Being practical and team/project based work
- Connections with the business world
- Mentoring
- The program is not preparing me to succeed in both academia and industrial research
- I’m not sure why one would need a PhD in the “business world” exactly
Collaborative Research

• 40% of participants have conducted research in collaboration with other departments outside of their own research area

• We expect that this can grow as the research themes of the strategic plan are moved forward into specific initiatives
Next Steps

- This is a work in progress
- We welcome participation
- We welcome feedback