New Faculty Workshop

05 November 2017
College Park, MD

Departmental Ecosystems:
Recruitment, Retention, Mentoring,
Diversity, Leadership, and More

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Director of Project Development
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Activity 1

• Take out a piece of paper
• What is the biggest issue you are facing or have recently faced in your department, or think you will face soon (but not time or money)
Activity 2

• What are 2-3 strategies for addressing this?
Activity 3

• What resources will you tap to address the issue?
• What do you wish existed to help you address the issue?
Goal: Increase the number of highly qualified high school physics teachers; Build a national coalition of universities engaged in this work

Strategy: Encourage and support physics departments to work proactively to recruit and educate future teachers. Provide best-practices and advocate for successful strategies (national meeting: 8-10 Feb 2018)

Contact: Monica Plisch, plisch@aps.org

Support: NSF-0108787, 0808790, 1646913, 1707990

URL: www.phystec.org

Percentage of Highly Qualified Teachers

<table>
<thead>
<tr>
<th>Subject</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Studies</td>
<td>~90%</td>
</tr>
<tr>
<td>English</td>
<td>~80%</td>
</tr>
<tr>
<td>Biology</td>
<td>~70%</td>
</tr>
<tr>
<td>Math</td>
<td>~60%</td>
</tr>
<tr>
<td>Physics</td>
<td>~30%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>~20%</td>
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</tbody>
</table>
**Goal:** Increase the number of underrepresented (URM) students earning a PhD in physics or astrophysics

**Strategy:** Collect applications from URM students not admitted, and make available to departments. Provide best-practices in admissions, mentoring, retention and support (Meeting: Oct 2018)

**Contact:** Erika Brown, brown@aps.org

**URL:** www.apsbridgeprogram.org

**Support:** NSF-0958333, 1143070
APS Conferences for Undergraduate Women in Physics (CUWiP)

**Goal:** Three-day regional conferences for undergraduate physics majors, to help women continue in physics by providing them with information about graduate school, professional career advice, and networking opportunities with other women in physics (Next events: 12-14 Jan 2018)

**Contact:** Miranda Bard, bard@aps.org

**Support:** NSF: 1346627, 1622510; DOE: DE-SC0011076

**URL:** www.aps.org/cuwip

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Image 1: CUWiP Attendance vs. US Female Physics Degrees and Canada

Image 2: Bar chart showing CUWiP Attendance from 2006 to 2016
Society of Physics Students

Goal: Support the professional development of undergraduate physics majors

Strategy: Sigma Pi Sigma – the physics honor society; leadership opportunities; department cohesion; scholarships; internships; outreach awards; undergrad research; conferences

Strategy: Careers Toolbox

Contact: Brad Conrad, bconrad@aip.org

URL: www.spsnational.org
Goal: Build excitement in populations beyond the physics/astronomy community for physics and science

Strategy: Mini-grants for outreach ($10,000); comic books, posters, and science kits for middle school classrooms (PhysicsQuest); blogs and social media posts on “cool” science

Contact: Becky Thompson, thompson@aps.org

URL: www.physicscentral.org
**Goal:** Increase the number of African American, Hispanic American, and Native American undergraduates obtaining physics bachelor’s degrees

**Strategy:** Connect students with local faculty mentors and provide support and resources. Emergency financial aid fund to mentees (BEAM Fund). National recognition of mentoring service (coming).

**Contact:** Monica Plisch nmc@aps.org

**URL:** www.aps.org/nmc
Grad School Shopper

Goal: Provide information on physics / astronomy graduate programs
Strategy: Online resource with data, and comparisons
Contact: Yolanda Matthews, ymatthews@aip.org
URL: gradschoolshopper.com
Physics InSight Slideshow

Goal: Provide a careers-oriented hallway slideshow for recruitment
Strategy: Slideshow comes out ~2x/semester and features profiles of physicists in industry, national labs, and other non-academic (mostly) careers; focus on individuals without PhDs (students already get information on academic careers); editable to include local information; hundreds of slides available
Contact: Crystal Bailey, bailey@aps.org
URL: www.aps.org/careers/insight
National Reports

**Goal:** Provide best-practice advice on topics relevant to improving and supporting physics departments

**SPIN-UP:** Increase number of majors – [www.aps.org/programs/education/undergrad/faculty/spinup/spinup-report.cfm](http://www.aps.org/programs/education/undergrad/faculty/spinup/spinup-report.cfm)

**T-TEP:** Improve teacher education – [www.phystec.org/webdocs/TaskForce.cfm](http://www.phystec.org/webdocs/TaskForce.cfm)

**Phys21:** Enhance career readiness of majors – [www.compadre.org/Phys21](http://www.compadre.org/Phys21)

**LGBT+:** Improve climate for LGBT physicists – [www.aps.org/programs/lgbt/](http://www.aps.org/programs/lgbt/)

**GradEd:** Improve graduate education – [www.aps.org/programs/education/graduate/conf2013/report.cfm](http://www.aps.org/programs/education/graduate/conf2013/report.cfm)
APS Policy Statements

**Goal:** Advocate for physicists, and the broader community

**Topics:**
- Education
- Ethics and Values
- Human Rights
- Internal Policy
- National Policy

**Education Topics:**
- Undergraduate Research Statement
- K-12 Education Statement
- Career Options for Physicists
- Advocacy for Science Education
- Improving Education for Professional Ethics, Standards and Practices
- Assessment and Science
- Research in Physics Education

**URL:** www.aps.org/policy/statements

Coming soon: Physics GRE
Statistics

Goal: Provide data to help faculty and departments understand the national picture and make comparisons

AIP SRC: Comprehensive data on faculty, students, careers, and diversity – www.aip.org/statistics

APS: Graphics, data, and presentation-ready slides using national sources to inform departments on students, women, minorities, and trends; comparison tool to rank your department – www.aps.org/programs/education/statistics
Portal: Introductory Physics for the Life Sciences

**Goal:** Transformative web site for sharing, testing, and disseminating materials for IPLS and related courses. Being developed by AAPT and eight colleges and universities. Up and running by mid-2018

**Contact:** Bob Hilborn, rhilborn@aapt.org

**URL:** www.compadre.org/ipls/

**Support:** NSF: 1624185
Partnership for Integrating Computation into UG Physics

**Goal:** Survey of the current usage of computational work in undergraduate physics programs (report available early 2017). Annual Computational Physics Faculty Development Workshop. Computational Physics workshops at AAPT section meetings, and APS and AAPT national meetings

**Contact:** Bob Hilborn, rhilborn@aapt.org

**URL:** www.compadre.org/picup

**Support:** NSF: 1432363, 1524963, 1505278
Physics Research
Mentor Training Seminar

Goal: Help research mentors improve their mentoring skills

Strategy: Provide a guidebook and materials to facilitate a 10-week seminar for physics researchers. Includes guidance on how to run workshops, directed readings, and strategy tips

Contact: Monica Plisch, plisch@aps.org

URL: www.aps.org/link/mentor-training
Council on Undergraduate Research

**Goal:** Advocating for faculty’s role in providing undergraduate research opportunities for students

**Strategy:** Develop faculty networks, develop tools and resources that support faculty, assess impact of undergraduate research, advocate and pilot new ways to engage students in research

**Contact:** Terry Oswalt (ERAU), terry.oswalt@erau.edu

**URL:** www.cur.org
**Goal:** Enable women in physics and astronomy departments (particularly those who are isolated) to create their own eAlliance, a peer mentoring group of other women physicists or astronomers who share similar characteristics.

**Contact:** eAlliances@aapt.org

**URL:** ealliances.aapt.org

**Support:** NSF: 1500529
Professional Skills Development Workshops

**Goal:** Improve the negotiation and communication skills for women

**Strategy:** 1-day workshop at national APS meetings; facilitation by nationally recognized leaders in negotiation and communication strategies

**Contact:** Miranda Bard, women@aps.org

**Support:** NSF-0347210, 0752540, 1012585, 1419913

**URL:** www.womeninphysics.org
CSWP Site Visits to Improve the Climate for Women and Minorities

**Goal:** Improve the climate for underrepresented individuals in physics departments

**Strategy:** 1-2 day site visits resulting in a formal report to the chair; 1-year follow up; focus on Research Universities, National Laboratories, Scientific Collaborations; 79 visits over last 25 years; best-practices in hiring, retention, climate, etc. available on the website; led by the APS Committee on the Status of Women in Physics (CSWP) and APS Committee on Minorities (COM)

**Contact:** Miranda Bard, women@aps.org

**URL:** www.womeninphysics.org
Women in Physics Groups

**Goal:** Improve recruitment and/or retention of women in physics (WiP)

**Strategy:** Provide mini-grants (up to $1,000) to build, improve, or sustain WiP groups; collect and share ideas on activities

**Examples:** Workshops on careers, communication, negotiation, leadership, dealing with bias, other skills; high school or middle school classroom visits; lab tours or field trips; research expos; book club or journal club; group lunches, dinners, or social events

**Contact:** Miranda Bard, women@aps.org

**URL:** www.womeninphysics.org
Undergraduate Curriculum Taskforce
White Papers

Product: AAPT recommendations for the Undergraduate Physics Laboratory Curriculum
Product: AAPT recommendations for Computational Physics in the Undergraduate Physics Curriculum
Source: Both available on your USB drive
Contact: Ernie Behringer, ebehringe@emich.edu
URL: www.aapt.org
Guide for Program Assessment, Improvement, and Review

**Goal:** Develop a working document to guide departmental review, assessment, and improvement

**Strategy:** National task force to design, write, vet, and disseminate a collection of effective practices and guide for self-assessment, along with its inherent review structure to improve undergraduate physics. Although not accreditation at this time, it will form the basis of a document that could be used in this fashion; first sections likely to come out this spring with the full guide released in early 2019.

**Contact:** Theodore Hodapp, hodapp@aps.org

**Support:** American Physical Society, NSF: 1738311, 1747563
Hints for the Future

• Understand the problems of the people “up the chain” (chair, dean, provost, etc.), and solve their problems – this will allow you to gain resources to solve your problems.

• Keep leadership informed about your progress relatively often – do not ask for resources when you do this; this develops a relationship and your credibility for the time when you do need resources.

• Don’t go “around” your leaders (chair, dean, etc.), but don’t let a negative response stop you – regroup, or be patient.

• Involve your students – they have intrinsic knowledge of context.

• Ask for help: mentors, chair, other faculty in or out of department.