JILLIAN BORNAK, PH. D.

Education, Inspiration, and Creation

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SKILLS

- ❖Astronomy & Physics content
- ❖Course Development
- ❖Blackboard, Echo360
- ❖Mac iWork
- ❖Website Maintenance
- ❖Digital & Print graphics
- ❖Native Plants
- ❖Drawing, Sculpting

MEMBERSHIPS

American Association of Physics Teachers (AAPT)

Sigma Pi Sigma and Society of Physics Students (SPS)

PROFILE

Enthusiastic university teacher with experience developing astronomy and physics courses and long-term collection & analysis of student abilities and feedback. Skilled at captivating students and communicating complex topics via interactive techniques and dedicated to supporting students and equity. Additionally gifted with visual design skills and an unstoppable ability to pun.

EXPERIENCE

Associate Lecturer, The University of Toledo; Toledo, OH — 2013-present

Developed astronomy and physics courses for majors and non-majors incorporating active learning in classes from 15 to 175 students, face-to-face and online, asynchronous and synchronous; Earned campus-wide reputation and increased enrollment in my classes; Long term collection & analysis of student abilities and feedback

- ASTR 1010 "Survey of Astronomy", general education, Fa/Sp2013-current
- PHYS 2100 "Physics with Calculus", calculus-based physics 1&2 for students who took algebra-based sequence Sp2020-current
- PHYS 1750 "Introduction to Physics", algebra-based physics 1&2 Fa2019-current
- NSM 1000 "First Year Experience", freshman orientation for physics, astronomy, math majors Fa2018-current
- PHYS 2070 "General Physics I", algebra-based physics 1 Fa2013-16

Training graduate students in modern education methods; Serving as advisor on two graduate student committees

Presenting "Careers in Astronomy" talk to audiences ranging from high school to college students in Ritter Planetarium and on main campus

Serving on Natural Sciences and Math (NSM) Grievance Council; Ran First Faculty Colloquium teaching workshop; Serving on Department Web Committee; Served on organizing committee for Toledo's hosting of the 2018 APS Conference for Undergraduate Women in Physics (CUWiP); Served as Chair of the committee to celebrate the 50th Anniversary of the dedication of Ritter Astrophysical Research Consortium (RARC)

Developing and maintaining department directory posters incorporating plain-language research descriptions, additionally used as reference for department office

Awards

- University of Toledo Provost Office Outstanding Teaching Award, 2017
- University of Toledo Faculty February Shining Star Award, 2014

Professional development

- Student Experience Project, promoting equitable teaching practices to a diverse student body
- UT Leadership Institute, background and perspective to prepare for greater leadership responsibility

Adjunct, Dona Ana Community College; Las Cruces, NM — 2012-2013

Designed introductory solar system astronomy course for 20-30 students; developed and implemented computer- and web-based labs

Graduate Researcher, New Mexico State University — 2007-2012

Advisor Dr. Tom Harrison; modeled dust formation in classical nova V838 Cen, infrared photometry of neutron star binary jet in Z source GX 17+2; optical and infrared observations at KPNO 2.1m (AZ), APO 3.5m (NM), SOAR 4m (Chile), CTIO 0.9m (Chile)

Taught and graded labs for undergraduate astronomy; Mentored other astronomy teaching assistants; Tombaugh Observatory TA responsible for target selection, telescope operation, scheduled volunteers

Presented in conference, classroom, and outdoor settings; Transported and ran equipment for monthly star parties with Las Cruces Natural History Museum (attendance ≤ 60); Organized May 2012 annular solar eclipse event for Las Cruces by chairing event committee, organizing volunteers, handling public relations (attendance ~2,000)

Awards and Scholarships

- Barry Neil Rappaport Scholarship for outreach, 2009
- Graduate Assistantship Award, 2009
- New Mexico Space Grant Graduate Research Fellowship, 2008-2009
- NMSU Higher Education Department Grant, 2008-2009

Physics Lab Assistant, University of Pennsylvania; Philadelphia, PA — 2003-2004

Revised introductory physics lab manual; Set up and ran physics labs

Web Design & Photography, Dynamic Digital Advertising; Feasterville, PA — 2001-2002

EDUCATION

New Mexico State University, Las Cruces, NM, Ph.D. Astronomy 2012
New Mexico State University, Las Cruces, NM, M.S. Astronomy 2010
Syracuse University, Syracuse, NY, B.A. Physics 2000

PUBLICATIONS

Spitzer Observations of GX17+2: Confirmation of a Periodic Synchrotron Source, Harrison, T. E.; McNamara, B. J.; **Bornak, J.**; Gelino, D. M.; Wachter, S.; Rupen, M. P.; Gelino, C. R., ApJ 736, 2011

Additional Spitzer IRS Spectroscopy of Three Intermediate Polars: The Detection of a Mid-Infrared Synchrotron Flare from V1223 Sagittarii, Harrison, T. E.; **Bornak, J.**; Rupen, M., Howell; S. B.; ApJ 710, 2010

A Possible Period for the K-band Brightening Episodes of GX 17+2, **Bornak, J.**, McNamara B. J., Harrison, T. E., Rupen, M. P., Bandyopadhyay, R. M., Wachter, S., ApJ Letters 701, 2009

Infrared Photometry and Spectroscopy of VY Aqr and EI Psc: Two Short-Period Cataclysmic Variables With Curious Secondary Stars, Harrison, T. E., **Bornak, J.**, Howell, S. B., Mason, E., Szkody, P., McGurk, R., ApJ 137, 2009