

# JILLIAN BORNAK, PH. D.

---

## Education, Inspiration, and Creation

jillian.bornak@utoledo.edu  
419-530-2226  
McMaster Hall, Room 4008

2801 W. Bancroft St.  
Toledo, OH 43505

[gothosenterprises.com/  
black\\_holes](http://gothosenterprises.com/black_holes)

## SKILLS

- ❖ Astronomy & Physics content
- ❖ Course Development
- ❖ Blackboard, Echo360
- ❖ Mac iWork
- ❖ Website Maintenance
- ❖ Digital Graphics
- ❖ Native Plant Gardening
- ❖ 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 & Physics courses and long-term collection & analysis of student performance and feedback. Skilled at captivating students and communicating complex topics via interactive techniques and dedicated to supporting student 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 for non-majors; Fall/Spring 2013-current
- PHYS 2100 "Physics with Calculus", calculus-based physics 1&2 for students who took algebra-based sequence; Spring 2020-current
- PHYS 1750 "Introduction to Physics", algebra-based physics 1&2; Fall 2019-current
- NSM 1000 "First Year Experience", freshman orientation for physics, astronomy, math majors; Fall 2018-current
- PHYS 2070 "General Physics I", algebra-based physics 1; Fall 2013-16

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; Co-ran First Faculty Colloquium, a series of six workshops over the academic year where peers grapple with common problems and practice with new techniques; 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, used as reference by department office

## Awards

- University of Toledo Provost Office Distinguished University Lecturer, 2022
- University of Toledo Provost Office Outstanding Teaching Award, 2017
- University of Toledo February Shining Star Award, 2015

## Professional Development

- Spring 2021-current, Student Experience Project, UToledo promoting equitable teaching practices for a diverse student body
  - currently serving as an Equity Champion Faculty Leader for a pod of 10 faculty and grad students
- Spring 2019, UT Leadership Institute, UToledo, background & perspective to prepare for greater leadership responsibility
- Fall 2018-Spring 2020, First Faculty Colloquium, UToledo, a series of six workshops over the academic year where peers grapple with common problems and practice with new techniques
  - attended in Fall 2018-Spring 2019
  - co-ran with another faculty member Fall 2019-Spring 2020
- 2017 Summer National Astronomy Teaching Summit, Ft Myers, FL, from the Center for Astronomy & Physics Education Research (CAPER)
- 2017 April, University Assessment Committee Assessment Workshop, UToledo
- 2015 February, PhysTEC "Build a Thriving Undergraduate Program", Seattle, Wa, aimed at helping physics departments increase enrollment and retention by applying the lessons from the SPIN-UP report

## **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, Las Cruces, NM — 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 roughly 10 astronomy teaching assistants with running labs and created website repository of common tips, websites, and student stumbling points for labs; 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  $\leq 60$ ); 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