The Scholarship of Teaching and Learning

Courses Taught in Resident Instruction

Course Number and Title	Semester/Year	Enrollment	Credits
Astro 001: The Astronomical Universe	Spring/98	371	3
Astro 485: Introduction to High-Energy Astronomy	Fall/98	15	3
Astro 001: The Astronomical Universe	Spring/99	370	3
Astro 496: Independent Studies	Spring/99	1	1
Astro 597A: X-ray Investigations of Active Galaxies	Fall/99	11	1
Astro 496: Independent Studies	Fall/99	1	1
Astro 550: High-Energy Astrophysics	Spring/00	7	3
Astro 496: Independent Studies	Spring/00	1	1
Astro 597B: Inservice Workshops in Astronomy	Summer/00	18	2
Astro 485: Introduction to High-Energy Astronomy	Fall/00	13	3
Astro 496: Independent Studies	Fall/00	1	3
Astro 496: Independent Studies	Spring/01	1	3
Astro 597B: Inservice Workshops in Astronomy	Summer/01	12	2
Astro 197A: Black Holes in the Universe	Fall/01	24	3
Astro 597B: Inservice Workshops in Astronomy	Summer/02	18	2
Astro 001: The Astronomical Universe	Fall/02	369	3
Astro 197A: Black Holes in the Universe	Spring/03	31	3
Astro 597B: Inservice Workshops in Astronomy	Summer/03	9	2
Astro 485: Introduction to High-Energy Astronomy	Fall/03	15	3
Astro 597B: Inservice Workshops in Astronomy	Summer/04	10	2
Astro 597A: X-ray Investigations of Active Galaxies	Fall/04	10	3
Astro 130: Black Holes in the Universe	Spring/05	29	3
Astro 597B: Inservice Workshops in Astronomy	Summer/05	9	2
Astro 485: Introduction to High-Energy Astronomy	Fall/05	20	3
Astro 597B: Inservice Workshops in Astronomy	Summer/06	17	2
Astro 550: High-Energy Astrophysics	Fall/06	8	3
Astro 130: Black Holes in the Universe	Spring/07	70	3
Astro 597B: Inservice Workshops in Astronomy	Summer/07	10	2
Astro 485: Introduction to High-Energy Astronomy	Fall/07	18	3

Undergraduate Advising

Semesters	Name	Status After Graduation
Fall 97–Fall 98	Shan Chih Hu	Transferred to Liberal Arts
Fall 97–Spring 01	Paul de Naray	Graduated and hired at Lockheed Martin
Fall 97–Spring 98	Brian Dewhurst	Transferred to the University of Virginia
Fall 97–Spring 00	Matthew Ward	Graduated and hired at Unisys on telecommunications
Fall 98–Fall 99	Thomas Collins	Transferred to Meteorology
Fall 98–Fall 99	Eve Locastro	Transferred to Barnard College
Fall 98–Fall 99	Paul Weber	Withdrew from the University
Fall 99–Spring 01	Matthew Collinge	Ph.D. student at Princeton University (honors)
Fall 99–Fall 00	Theresa Diehl	Transferred to Geosciences (honors)
Fall 99–Fall 04	Thomas Hickey	Graduated and hired by a NASA contractor
Fall 00–Spring 02	Nicholas Bond	Ph.D. student at Princeton University (honors)
Fall 00–Spring 04	Joseph Masiero	Ph.D. student at the University of Hawaii (honors)
Fall 00–Spring 02	Stephanie Zonak	Ph.D. student at University of Maryland (honors)
Spring 01–Spring 04	Matthew Tibbits	Graduated and hired by Penn State Physics (honors)
Fall 01–Spring 04	Stephen Bongiorno	Ph.D. student at the Pennsylvania State University (honors)
Fall 01–Spring 02	Timothy Reichert	Ph.D. student at Johns Hopkins University (honors)
Fall 01–Spring 04	Eric Rotthoff	Graduated and hired by Raytheon (honors)
Fall 01–Spring 04	Jonathan Trump	Ph.D. student at the University of Arizona (honors)
Fall 02–Summer 03	James Gaffney	Ph.D. student at the University of Colorado (honors)
Fall 02–Spring 03	Sean McWilliams	Ph.D. student at the University of Maryland (honors)
Spring 04–Fall 06	Ezra Lee	Ph.D. student at the University of California, Irvine (honors)
Spring 04–Fall 04	Jesse Pankyo	Withdrew for medical reasons (honors)
Fall 04–present	Vincent Viscomi	Senior (honors)
Spring 05–Spring 07	Dennis Just	Ph.D. student at the University of Arizona (honors)
Fall 05–present	Timothy Bunting	Senior
Fall 05–Fall 06	Harrison Zeff	Transferred to Civil Engineering (honors)
Fall 06–Spring 07	John Cybulski	Graduated and hired by Penn State Astronomy (honors)
Fall 06–Spring 07	Jessica Hart	Ph.D. student at the University of Michigan
Fall 06–present	Jason Hwang	Junior (honors)
Fall 06–present	Therese Jones	Senior (honors)

First-and-Second Year Graduate Advising

Semesters	Name	Status
Fall 98–Fall 99	Xinyu Dai	Graduated
Fall 99–Fall 00	John Debes	Graduated
Fall 01–Fall 02	Avi Mandell	Graduated
Fall 03–Fall 04	Emily Alicea-Muñoz	Graduate student
Fall 05–Fall 07	Michael Stroh	Graduate student

Student Evaluations of Teaching

Summary of Student Ratings of Teaching Effectiveness

Course/ Section	Sem./ Year	Enrollment/ Elective %	Number of Respondents	Overall Quality of the Course⋆	Overall Quality of the Instructor⋆
Astro 001/1	Spring/98	371/100%	210 (57%)	5.34	5.75
Astro 485	Fall/98	15/100%	12 (80%)	5.75	5.92
Astro 001/1	Spring/99	370/100%	208 (57%)	5.35	5.66
Astro 496	Spring/99	1/100%	0 (0%)	···	···
Astro 597A	Fall/99	11/75%	8 (73%)	5.50	5.88
Astro 496	Fall/99	1/100%	0 (0%)	···	···
Astro 550	Spring/00	7/100%	7 (100%)	5.57	5.43
Astro 496	Spring/00	1/100%	0 (0%)	···	···
Astro 597B	Summer/00	18/100%	0 (0%)	···	···
Astro 485	Fall/00	13/100%	7 (54%)	6.14	6.14
Astro 496	Fall/00	1/100%	0 (0%)	···	···
Astro 496	Spring/01	1/100%	0 (0%)	···	···
Astro 597B	Summer/01	12/100%	0 (0%)	···	···
Astro 197A	Fall/01	24/100%	11 (46%)	6.27	6.27
Astro 597B	Summer/02	17/100%	0 (0%)	···	···
Astro 001/3	Fall/02	369/100%	184 (50%)	5.05	5.54
Astro 197A	Spring/03	31/100%	18 (58%)	5.72	6.11
Astro 597B	Summer/03	9/100%	0 (0%)	···	···
Astro 485	Fall/03	15/100%	13 (87%)	5.92	6.23
Astro 597B	Summer/04	10/100%	0 (0%)	···	···
Astro 597A	Fall/04	10/50%	9 (90%)	6.11	6.44
Astro 130	Spring/05	29/80%	22 (76%)	5.40	5.87
Astro 597B	Summer/05	9/100%	0 (0%)	···	···
Astro 485	Fall/05	20/100%	19 (95%)	5.53	5.16
Astro 597B	Summer/06	17/100%	0 (0%)	···	···
Astro 550	Fall/06	8/100%	8 (100%)	6.25	6.25
Astro 130	Spring/07	70/100%	56 (80%)	5.80	5.86
Astro 597B	Summer/07	10/100%	0 (0%)	···	···
Astro 485	Fall/07	18/100%	15 (83%)	5.87	5.60

⋆ Mean score. Scores range from 0–7 with 7 being the highest.

Supervision of Graduate and Undergraduate Research

Graduate Research Supervised

- John Feldmeier, 'Heavy and Complex X-ray Absorption Toward the Nucleus of the Seyfert 1.5 Galaxy Markarian 6', Spring 98 research project. Research results published in *The Astrophysical Journal*, 510, 167–177 (1999). Won a National Science Foundation Astronomy & Astrophysics Postdoctoral Fellowship in 2003 at NOAO. Now an assistant professor at Youngstown State University.

- Sarah Gallagher, 'The View Through the Wind: X-ray Observations of Broad Absorption Line Quasi-Stellar Objects', Summer 98 to Spring 02. Ph.D. thesis successfully defended and multiple publications completed. Multiple job offers upon graduation; accepted a postdoctoral research position at the Massachusetts Institute of Technology with C.R. Canizares. Won a *Spitzer* Fellowship at UCLA. Now an assistant professor at the University of Western Ontario.

- Ann Hornschemeier, '*Chandra* X-ray Constraints on Normal and Starburst Galaxies at Cosmologically Interesting Distances', Fall 99 to Spring 02. Ph.D. thesis successfully defended and multiple publications completed. Multiple job offers upon graduation and won a *Chandra* Fellowship; accepted a *Chandra* Fellowship at Johns Hopkins University. Now at Goddard Space Flight Center as a civil-servant astrophysicist and Deputy Project Scientist for *Constellation-X*. Won the Annie J. Cannon Award of the American Astronomical Society in 2007.

- Junfeng Wang, 'Long-Term X-ray Variability of Circinus X-1 as Observed by the *RXTE* All-Sky Monitor', Spring 02 research project. Now a postdoctoral research associate at Penn State.

- Bret Lehmer, 'Characterizing the X-ray Properties and Evolution of Distant Galaxies Using Deep Extragalactic Surveys', Summer 02 to Summer 07. Ph.D. thesis successfully defended and multiple publications completed. Won the 2007 Downsborough Graduate Fellowship in Astrophysics. Multiple job offers upon graduation and won a PPARC Fellowship; accepted a PPARC Fellowship at Durham University.

- Laura Lopez, 'Chandra Snapshot Observations of High-Redshift, Radio-Loud Quasars', Summer 04 to Fall 05 research project. Research results published in *The Astronomical Journal*, 131, 1914–1922 (2006). Now a graduate student at UC Santa Cruz.

- Brendan Miller, 'X-ray Observations of Radio-Loud Broad Absorption Line Quasars', Summer 05 to present research project. Research results published in *The Astrophysical Journal*, 622, 163–176 (2006). Ph.D. thesis in progress.

- Bin Luo, 'The Deepest Extragalactic X-ray Surveys', Summer 06 to present research project. Research results accepted for publication in *The Astrophysical Journal* (arXiv:0711.2517 [astro-ph]). Ph.D. thesis in progress.

- Jianfeng Wu, 'The X-ray-to-Optical Emission Properties of Low-Luminosity Active Galaxies', Spring 07 to present research project.

Undergraduate Research Supervised

- Paul de Naray (currently at Lockheed Martin), 'Variable Sources and Deep X-ray Imaging of the Starburst/Seyfert 2 Galaxy NGC 1672', Summer 98 to Fall 99 research project. Research results published in *The Astronomical Journal*, 119, 612–619 (2000). One of the winners in the Penn State Eighth Annual Undergraduate Research Fair.
- Kevin Marshall (completed Ph.D. at Georgia State University; currently a research associate at Georgia State University), 'A Comprehensive Search for Soft X-ray Weak Quasi-Stellar Objects', Spring 99 to Spring 00 research project
- Matthew Collinge (Goldwater scholar; 2001 student marshal for the Department of Astronomy & Astrophysics; completed Ph.D. as a National Defense Science & Engineering and Martin Schwarzschild Ph.D. fellow at Princeton University; currently a Columbia Science Fellow at Columbia University), '*ASCA*, *Chandra*, and *HST* Studies of Nuclear Absorption in Seyfert Galaxies', Spring 99 to Spring 01 research project. Research results published in *Monthly Notices of the Royal Astronomical Society*, 317, L35–L39 (2000) and *The Astrophysical Journal*, 557, 2–17 (2001).
- Mala Mateen (currently a graduate student at the New Mexico Institute of Mining and Technology), 'A *ROSAT* Study of the Nearby Galaxies Maffei 1 and Maffei 2', Summer 99 to Spring 00 research project
- Jennifer Donley (Sylvia Stein Memorial Space Grant scholar; Goldwater scholar; Fulbright scholar; 2002 student marshal for the Eberly College of Science; currently a National Science Foundation Ph.D. fellow at the University of Arizona), 'A *ROSAT* Survey for X-ray Sources with Large-Amplitude Outbursts', Summer 99 to Spring 02 research project. Research results published in *The Astronomical Journal*, 124, 1308–1321 (2002).
- Lee Bassett (Goldwater scholar; 2004 winner of the Reddy Mission Award from the Schreyer Honors College; currently an Annenberg Marshall Scholar and a National Science Foundation Ph.D. fellow at the University of Cambridge), 'An X-ray Survey of High-Redshift Quasars with Radio Detections', Fall 02 to Spring 04 research project. Research results published in *The Astronomical Journal*, 128, 523–533 (2004).
- Dennis Just (2007 student marshal for the Department of Astronomy & Astrophysics; currently a graduate student at the University of Arizona), 'The X-ray Properties of the Most-Luminous Quasars from the Sloan Digital Sky Survey', Fall 05 to Spring 07 research project. Research results published in *The Astrophysical Journal*, 665, 1004–1022 (2007).

Undergraduate Honors Projects Supervised

- Joseph Maywalt, 'Modeling the Internal Structure of White Dwarfs Using a Computer', Fall 98 honors project for Astro 485
- Nicholas Bond, 'The Degenerate Universe: White Dwarf Stars', Fall 00 honors project for Astro 485

- Jennifer Donley, 'The Structure of White Dwarfs', Fall 00 honors project for Astro 485
- Natalie Hepler, 'Pulsars, Binary Pulsars, and Relativity', Fall 01 honors project for Astro 197A
- Matthew Tibbits, 'Numerical Studies of White Dwarf Structure', Fall 03 honors project for Astro 485
- David Atlee, 'Degenerate Matter: A Study of White Dwarf Stars', Fall 05 honors project for Astro 485
- Jessie Hart, 'A Computational Investigation of White Dwarf Stars', Fall 05 honors project for Astro 485
- Dennis Just, 'Numerical Investigation into the Structure of White Dwarf Stars', Fall 05 honors project for Astro 485

Membership on Graduate Degree Candidates' Committees

- Sarah Gallagher, comprehensive exam committee (chair), Astronomy & Astrophysics
- Sarah Gallagher, Ph.D. thesis committee (chair), Astronomy & Astrophysics, Ph.D. completed in April 2002
- Catherine Grant, Ph.D. thesis committee, Astronomy & Astrophysics, Ph.D. completed in June 1999
- Rajib Ganguly, comprehensive exam committee, Astronomy & Astrophysics
- Rajib Ganguly, Ph.D. thesis committee, Astronomy & Astrophysics, Ph.D. completed in April 2002
- Ann Hornschemeier, comprehensive exam committee, Astronomy & Astrophysics
- Ann Hornschemeier, masters thesis committee, Astronomy & Astrophysics, M.S. completed in August 1999
- Ann Hornschemeier, Ph.D. thesis committee (chair), Astronomy & Astrophysics, Ph.D. completed in April 2002
- Oleg Kargaltsev, comprehensive exam committee, Astronomy & Astrophysics
- Oleg Kargaltsev, Ph.D. thesis committee, Astronomy & Astrophysics, Ph.D. completed in October 2004
- Bret Lehmer, comprehensive exam committee (chair), Astronomy & Astrophysics
- Bret Lehmer, Ph.D. thesis committee (chair), Astronomy & Astrophysics, Ph.D. completed in August 2007
- Karen Lewis, comprehensive exam committee, Astronomy & Astrophysics

- Karen Lewis, Ph.D. thesis committee, Astronomy & Astrophysics, Ph.D. completed in August 2005
- Bin Luo, comprehensive exam committee (chair), Astronomy & Astrophysics
- Bin Luo, Ph.D. thesis committee (chair), Astronomy & Astrophysics, Ph.D. pending
- Brendan Miller, comprehensive exam committee (chair), Astronomy & Astrophysics
- Brendan Miller, Ph.D. thesis committee (chair), Astronomy & Astrophysics, Ph.D. pending
- Manodeep Sinha, comprehensive exam committee (chair), Astronomy & Astrophysics
- Michael Sipior, Ph.D. thesis committee, Astronomy & Astrophysics, Ph.D. completed in April 2003
- Britton Smith, comprehensive exam committee, Astronomy & Astrophysics
- Britton Smith, Ph.D. thesis committee, Astronomy & Astrophysics, Ph.D. completed in July 2007
- Mike Weinstein, comprehensive exam committee, Astronomy & Astrophysics
- John Wise, comprehensive exam committee, Astronomy & Astrophysics
- Jian Wu, comprehensive exam committee, Astronomy & Astrophysics
- Writer of questions and grader for the 1998–2003 graduate candidacy exams. Grader for the 1999–2002 graduate placement exams.

Postdoctoral Research Associates

- Shai Kaspi, Astronomy & Astrophysics, 1999–2001. Currently a postdoctoral researcher at Tel-Aviv University and the Technion.
- David Alexander, Astronomy & Astrophysics, 2000–2003. Won a Royal Society Research Fellowship in 2003 at the University of Cambridge. Won a Philip Leverhulme Prize in 2007. Currently a Reader (permanent position) in the Department of Physics at the University of Durham.
- Franz Bauer, Astronomy & Astrophysics, 2000–2003. Won a *Chandra* Fellowship in 2004 at Columbia University. Currently a *Chandra* Fellow at Columbia University.
- Cristian Vignali, Astronomy & Astrophysics, 2001–2003. Currently a permanent researcher at the Università degli Studi di Bologna and the Osservatorio Astronomico di Bologna.
- Stefan Immler, Astronomy & Astrophysics, 2002–2004. Currently an XMM-Newton and Swift scientist at Goddard Space Flight Center.
- Wentao Wu, Astronomy & Astrophysics, 2003–2004. Currently a staff member at Yunnan Observatory.

- Iskra Strateva, Astronomy & Astrophysics, 2004–2005. Currently a postdoctoral researcher at the Max-Planck-Institut für Extraterrestrische Physik.
- Aaron Steffen, Astronomy & Astrophysics, 2004–2007. Currently an assistant professor at the University of Wisconsin—Marathon County.
- Ohad Shemmer, Astronomy & Astrophysics, 2004–2008. Currently an assistant professor at the University of North Texas.
- Rob Gibson, Astronomy & Astrophysics, 2006–present
- David Rafferty, Astronomy & Astrophysics, 2007–present
- Yongquan Xue, Astronomy & Astrophysics, 2008–present

Additional Relevant Activities

- Helped Ann Hornschemeier (Penn State graduate student) plan and develop a successful NASA Graduate Student Researchers Program proposal entitled 'Deep Observations with NASA's *Chandra* X-ray Observatory: Resolving the Discrete Sources of the Cosmic X-ray Background.' This proposal funded her graduate work from late 1999 to mid 2002.
- Helped Sarah Gallagher (Penn State graduate student) plan and develop a successful NASA Graduate Student Researchers Program proposal entitled 'Peering Through the Clouds: Absorption Studies of Luminous Active Galaxies with the New Generation of X-ray Observatories.' This proposal funded her graduate work from early 2000 to mid 2002.
- Won \$1800, \$1000, and \$900 grants from the 'President's Fund for Undergraduate Research' to engage undergraduate students in my research (January 2000, September 2002, and October 2003).
- Created a new Penn State course titled 'Black Holes in the Universe.' This course introduces non-science undergraduates to the predicted properties of black holes and the astronomical evidence for their existence. Modern ideas about space, time, and gravity are also studied. In 2003 this course was approved by the Penn State Faculty Senate as Astro 130 (formerly it was temporarily listed as Astro 197A). I have taught this course four times.
- Created a new Penn State course titled 'X-ray Investigations of Active Galaxies: Exploring the Environments of Supermassive Black Holes.' This course reviews some of the key findings of X-ray spectroscopic, variability, and imaging observations of active galaxies. Students read and present research papers from the scientific literature, and they prepare proposals to make X-ray satellite observations of active galaxies. I have taught this course two times.
- Guest lecturer for the first-year undergraduate astronomy seminar (main instructor was J. Charlton), a seminar on outflows from active galaxies (main instructor was G. Chartas), and a course on news writing (main instructor was S. Sampsell).

- Faculty marshal for the Department of Astronomy & Astrophysics (May 2001; student marshal was Matthew Collinge), the Eberly College of Science (May 2002; student marshal was Jennifer Donley), and the Department of Astronomy & Astrophysics (May 2007; student marshal was Dennis Just).

Teaching Performed Prior to Penn State

Dates	Teaching Performed	Number of Students
Fall 1995	Teaching assistant for statistical physics course University of Cambridge astronomy tripos	10
Spring 1996	Teaching assistant for high-energy astrophysics course University of Cambridge astronomy tripos	8