
AST 398T: Supervised Teaching in Astronomy

aka “Introduction & Application of Evidence-Based Teaching”

Course Instructor / Contact:

Dr. Keely Finkelstein

Pronouns: she / her / hers

Office: PMA 16.206

Email: keelyf@astro.as.utexas.edu

Drop-in office hours: TBD



Schedule of Class Meetings

- Room: PMA 15.216B
- Days / Time: MW 10-11:30am

Course description and objectives

This course is designed to introduce graduate students to evidence-based strategies for teaching astronomy effectively in undergraduate courses. This semester, participants will:

- Select instructional topics based on common challenges and misconceptions in astronomy
- Write learning objectives using Bloom's taxonomy
- Describe and design several strategies for assessment of student learning
- Explain the logistics and benefits of multiple active learning strategies
- Articulate the meaning and significance of alignment in lesson and course design
- Locate and utilize discipline-based education research articles
- Select evidence-based teaching strategies appropriate for topics in your discipline
- Plan and implement a mini lesson using backward design in an undergraduate class
- Identify features of a student-centered syllabus

Course credit requirements

- For graduate students, AST 398T, can be counted toward the required 9 courses in the Astronomy Graduate Program of study but must be taken for a grade (i.e. not for “credit / no-credit”).

Course materials

The required (*strongly recommended*) course textbook is: “How Learning Works: 7 Research-Based Principles for Smart Teaching” (Ambrose et al.) and it is available in e-textbook format through the Longhorn Textbook Access (LTA) program by the Co-Op (on Canvas). **It can be accessed in the “My Textbooks” section on Canvas.** By purchasing it you retain e-access to this book even after the class is over.

You are automatically opted into the program but can easily opt-out (and back in) via Canvas through the 12th class day. If you remain opted-in at the end of the 5th class day you will receive a bill through your “What I Owe” page and have until the end of the 20th class day to pay and retain access. If you do not pay by the 20th class day, you will lose access to the materials and your charge will be removed.

All other materials needed for the course and major assignments will be posted under Modules on Canvas (<https://canvas.utexas.edu/>).

Course assignments

The majority of the course assessments and assignments are designed to help you in working towards the main course product, which is designing and delivering a full “mini-lesson” in an undergraduate astronomy class. There will be a number of milestones along the way for you to complete. Most of these will be on a credit-no-credit basis, and will have built in time for revisions and updates after feedback. Full details for each assignment can be found in Canvas. *Milestones / Assignments include:*

1. Reflective class observation (planning & write-up) (5%)
2. Mini lesson topic and learning objectives (5%)
3. Summative assessments (5%)
4. Mini lesson design - initial draft (15%)
5. Mini lesson revision - alignment check & peer feedback (5%)
6. Mini lesson presentation (20%)
7. Discipline-based education article summary & discussion lead (10%)
8. Participation (based on self review, see rubric) (15%)
9. Final Reflection essay on lesson design process (10%)
10. Teaching Statement draft exercise (10%)

Course calendar (topics subject to some change)

Date *	Topics
Week #1 Jan. 9 & 11	Principles of Learning 1: Prior knowledge & knowledge organization Homework 1: Reflective class observation planning
Week #2 Jan. 18	Backward Design
Week #3 Jan. 23 & 25	Learning Objectives & Assessment Homework 2: Identify a challenging topic or misconception, write learning objectives
Week #4 Jan. 30 & Feb. 1	Assessment & Rubrics Homework 3: Reflective class observation write-up
Week #5 Feb. 6 & 8	Check for Student Understanding & Lesson Planning Homework 4: Write summative assessment aligned with learning objectives
Week #6 Feb 13 & 15	Lesson Planning, 5Es, & Developing Effective Class Sessions
Week #7 Feb. 20 & 22	Active Learning: Strategies and Implementation Homework 5: Plan an active mini-lesson
Week #8 Feb. 27 & March 1	Teaching practice: Teach your micro-lesson and receive feedback in groups of three Homework 6: Revise LOs, assessment, and mini-lesson
Week #9 March 6 & 8	Inclusive Teaching / Teaching All Students Homework 7: Discipline-based education article summary
March 13-17	Spring Break - no classes
Week #10 March 20 & 22	Self-directed learning / metacognition techniques & Making thinking visible
Week #11 March 27 & 29	Principles of Learning 2: Motivation & mindset, purpose (course design aspects) Homework 7: Discipline-based education article summary
Week #12 April 3 & 5	Using Advanced Questioning Techniques & Using Concept Maps and other Visualization Tools
Week #13 April 10 & 12	Inclusive teaching 2: Privilege, identity, stereotype threat Homework 7: Discipline-based education article summary
Week #14 April 17 & 19	Course planning: Student-centered goals, guide to syllabus writing, inclusive syllabi Homework 9: Final Reflection Essay - Lesson Design Process
Week #15 April 24	Semester Wrap-Up; Course Evaluations; any remaining course work due Homework 10: Draft Teaching Statement

General Class Information and Expectations

Class Format:

AST 398T will be taught in-person in Spring 2023. Attendance in each class is expected and will be very discussion based, with frequent opportunities for peer feedback, so active participation is needed.

If you occasionally need to miss class for illness, other work / research related travel, observance of a religious holy day, or other reasons, please notify me of your pending absence(s) as far in advance as possible. We can then work together to allow you to make up any missed classwork, assignments within a reasonable amount of time.

Classroom Safety and COVID-19:

- For any illness, students should stay home if they are sick or contagious, not only to stop the spread, but also to prioritize personal well-being.
- UHS provides [symptomatic COVID-19 testing](#) for students. Schedule your appointment by calling 512-471-4955 or online within the MyUHS patient portal. Learn more about symptomatic COVID-19 testing [here](#).
- If you are experiencing any COVID-19 symptoms or have had a recent exposure, follow the guidance on [UT's Exposure Action Chart](#).
- Stay up to date on [COVID-19 vaccinations](#) by getting all available boosters when eligible. Vaccines are available through University Health Services.
- Visit protect.utexas.edu & <https://healthyhorns.utexas.edu/coronavirus.html> for more information.

Learning environment and success in the classroom:

Environment: I am committed to providing you with a friendly, productive, and effective learning environment. Your success in this class is important to me. We all learn differently, and everyone struggles sometimes. You are never the only one having difficulty! If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we will develop strategies to meet both your needs and the requirements of the course.

In addition, there are a few things that we can all agree to do to make this class as supportive, productive, and meaningful as possible for everyone:

- **Participate:** Active, engaged participation from students is extremely important for this class! You are expected to participate in group discussions, give feedback to peers, work through discussions and scenarios yourself and in groups, and avoid distractions during class. This helps make the class learning environment more productive and enjoyable for everyone!
- **Expectations regarding mutual respect:** Science and education belongs to all people, independent of race, religion, gender, gender identity, gender expression, or sexual orientation. Incidents of discrimination, assault, harassment, threats, intimidation, profiling, or coercion based on

membership or perceived membership will not be tolerated. Show each other respect no matter perceived knowledge or performance in this class, or any other.

- It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed, and that the diversity that students bring to this class can be comfortably expressed and be viewed as a resource, strength and benefit to all students. Please come to me at any time with any concerns.

Where can I find University Resources?

- **Disability and Access (D&A):** The university, as am I, is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability & Access (D&A). Please refer to the D&A website for more information: <http://diversity.utexas.edu/disability/>. If you are already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course. *I am also happy to meet in person or virtually over Zoom to discuss more.*
- **Counseling and Mental Health Center (CMHC):** We all benefit from support during times of struggle. Know you are not alone. If you are experiencing signs of stress, anxiety, depression, academic concerns, loneliness, difficulty sleeping, or any other concern impacting your well-being – you are strongly encouraged to connect with CMHC. The Counseling and Mental Health Center is located on campus and provides a wide variety of mental health services to UT students including crisis services, counseling services with immediate support and well-being resources. Additionally, CARE Counselors are located within each of the academic schools and colleges. These counselors are familiar with the concerns that are unique to their unit's students. For more information on CMHC, visit cmhc.utexas.edu or call 512-471-3515.
- **University Health Services (UHS):** Your physical health and well-being are a priority. University Health Services is the on-campus medical facility providing high quality medical care and patient education to UT students. Services offered include general medicine, specialty clinics including the gynecology clinic, sports medicine, nutrition services, allergy, immunization and travel health and physical therapy, an urgent care, a 24/7 nurse advice line, and a lab and radiology services. For additional information, visit healthyhorns.utexas.edu or call 512-471-4955.
- **Personal or Family Emergencies:** Student Emergency Services in the Office of the Dean of Students helps students and their families during difficult or emergency situations. Assistance includes outreach, advocacy, intervention, support, and referrals to relevant campus and

community resources. If you need to be absent from class due to a family emergency, medical or mental health concern, or academic difficulty due to crisis or an emergency situation, you can work with Student Emergency Services. SES will document your situation and notify your professors. Additional information is available at <https://deanofstudents.utexas.edu/emergency/> or by calling 512-471-5017.