Course Syllabus

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Course and Faculty Information

Course Description:

Founded and run by graduate students in Arizona State University's School of Life Sciences, Graduate Partners in Science Education's (GPSE) mission is to train graduate students in this course to become better scientists, more experienced educators, and superior science communicators through the design of science, technology, engineering and math (STEM) lesson plans and projects. At the completion of this course, students will: create a science lesson aligned with their personal scientific interests and state educational standards, modify existing science lessons for remote instruction, communicate effective feedback to peers about their science lessons, and communicate science to audiences of specific ages and skill levels. A particular emphasis of this course is on learning teaching practices that support classroom inclusion. Should students be interested in further involvement with GPSE, the spring semester involves weekly outreach to local middle schools to present the designed lessons at after school science groups.

Credits: 1

Prerequisites: None

Instructor: Amanda Godar, agodar@asu.edu (mailto:agodar@asu.edu) (mailto:agodar@asu.edu)

Faculty Support: Dr. Stephen Pratt <Stephen.Pratt@asu.edu>

Instructor Office Hours: By appointment

Course Learning Objectives

At the completion of this course, students will:

1. Create a science lesson aligned with their scientific interests and educational standards

2. Modify science lessons for remote instruction and increased inclusivity

3. Communicate effective feedback to peers about their science lessons

4. Communicate science to audiences of specific ages and skill levels

Textbooks

None

Course Access

Your ASU courses can be accessed by both **my.asu.edu (http://my.asu.edu/)** and **asu.instructure.com (http://asu.instructure.com/)**; bookmark both in the event that one site is down.

Computer Requirements

This is an inperson course; however assignments will require a computer with internet access and the following technologies:

- Web browsers (**Chrome (https://www.google.com/chrome)**, **Mozilla Firefox (http://www.mozilla.org/en-US/firefox/new/)**, or **Safari (http://www.apple.com/safari/)**)
- **Adobe Acrobat Reader (http://get.adobe.com/reader/)** (free)
- **Adobe Flash Player (http://get.adobe.com/flashplayer/)** (free)
- Webcam, microphone, headset/earbuds, and speaker
- Microsoft Office (**Microsoft 365 is free (https://myapps.asu.edu/app/microsoft-office-2016-home-usage)** for all currently-enrolled ASU students)
- Reliable broadband internet connection (DSL or cable) to stream videos.

Note: A smartphone, iPad, Chromebook, etc. will not be sufficient for completing your work. While you will be able to access course content with mobile devices, you must use a computer for all assignments, quizzes, and virtual labs.

Course Schedule:

Week	Topic	Assignments & Activities
1	Course Introduction & Importance of Outreach presentation	**Learning objectives:** • Understand how the course is structured and how assignments, peer review, and the lesson plan feature into the final grade. • Students should be able to explain some of the reasons why science outreach and communication are important.
2	Science Communication	**Learning objectives:** ◦ Students should be able to quantitatively assess the amount of science that is available to the public

		◦ Students can apply principles of effective science communication in describing their own work. **Assignment:** ◦ Elevator pitch
3	Design of Lessons	**Learning objectives:** • Identify which level of inquiry their lesson plan is at • Build their lesson plan on the framework described, as a teachable unit • Learn and choose teaching strategies to implement in their lesson plan. **Assignment:** • Lesson framework
4	Assessment and NGSS	**Learning Objectives:** • Understand why learning assessments are important in science outreach and communication • Explain the difference between a summative and formative assessment. • Identify strategies from the reading that you can apply to assess the learning in your own science outreach lesson plan. • Navigate the NGSS webpage and match your lesson goal with an NGSS standard. **Assignment:** • Lesson plan extension - Assessments and NGSS
5	Student Engagement in Lesson Activities	**Learning objectives:** • Be able to describe the different learning styles for students. • Identify strategies to help engage students in the lesson plan **Assignment:** • Engagement strategies for lesson

6	Material & Remote Constraints	**Learning objectives:** • Identify which components of the lesson may need to either be adapted for limited resources or for e-learning • Incorporate lesson adaptation strategies into the lesson plan. **Assignment:** • Adapt lesson plan for material and remote constraints
7	Lesson Plan Pitch Week 1	**During this class period students will present their lesson plan in class.** **Assignment:** • Provide feedback to peers on lesson plan structure.
8	Fall Break	*No class due to Fall Break. Students may use the rest of the week to develop their lesson plans.*
9	Lesson Plan Pitch Week 2	**During this class period students will present their lesson plan in class.** **Assignment:** • Provide feedback to peers on lesson plan structure.
10	Addressing Biology Misconceptions	**Learning objectives:** • Understand common misconceptions related to STEM education. • Identify common misconceptions that may arise as related to your outreach lesson **In-Class:** • Journal club discussion. **Assignment:**

		• Reflection on misconceptions that could arise or impact lesson plans.
11	Inclusivity in Outreach	**Learning objectives:** • Understand barriers to diversity, equity, and inclusion in science • Develop strategies to improve DEI in science outreach and communication. **Assignment:** • Incorporate DEI into lesson plan
12	Arizona Museum of Natural History Collaboration	**Before Class:** • Prepare an 8-10 minute overview of your research for a general public audience using the science communication principles of the course. **In-Class** • Present research presentations to volunteers from the Arizona Museum of Natural History **Submit** • Feedback for peers on their presentations • The presentation created.
13-14	Presentation of students lesson plans	**Submit:** • Reflection on steps needed to complete your lesson plan. • Feedback to peers on their lesson plans.

15	Finals week	**Submit (by December 8 at midnight):**
		• Final lesson plan
		  ◦ Should address all categories specified on the final rubric
		  ◦ Should include all necessary lesson plan materials

Assignment Points:

Assignment	Evaluated for	Points
Self-designed lesson for remote instruction	Follows the final lesson plan rubric. • Learning Objectives • Assessments • Remote Procedures • Materials • Inquiry • Student Engagement	30
Individual Assignments	Submit assignments in a timely fashion. One assignment grade will be dropped. • Elevator Pitch (10 pts) • Lesson Framework (10 pts) • Outcome Assessments and NGSS (10 pts) • Engagement (10 pts) • Material and Remote constraints (10 pts) • AZ MNH Presentation (10 pts)	50
Class Participation	Complete peer review and/or discussion board posts and participate during class discussions • Introduction and intended audience (4 pts) • Peer review of lesson plans (4 pts) • Lesson plan misconceptions (4 pts) • Inclusion practices in lesson plan (4 pts) • AZ MNH collaboration feedback (4 pts)	20
Total Points		100

Help

For technical support, use the Help icon in the black global navigation menu in your Canvas course or call the ASU Help Desk at 1+(855) 278-5080. Representatives are available to assist you 24 hours a day, 7 days a week.

Student Success

To be successful:

- check the course daily
- read announcements
- read and respond to course email messages as needed
- complete assignments by the due dates specified
- communicate regularly with your instructor and peers
- create a study and/or assignment schedule to stay on track
- access **ASU Online Student Resources (https://rb.gy/wvpxsn) (https://goto.asuonline.asu.edu/success/online-resources.html)**

Grading

Your grade will be determined based on the following grading schema:

Grade	Percentage
A+	100% - 97%
A	<97-94%
A-	<94-90%
B+	<90-87%
B	<87-84%
B-	<84-80%
C+	<80-77%
C	<77-70%
D	<70-60%
E	<60%

Absences

Students are allowed 1 unexcused absence without their grade being impacted. If 3 classes are missed, the student will be dropped from the course. Exceptions to this include ***ACD 304–04*** **(http://www.asu.edu/aad/manuals/acd/acd304-04.html)** *"Accommodations for Religious Practices."* as well as ***ACD 304–02*** **(http://www.asu.edu/aad/manuals/acd/acd304-02.html)** *"Missed Classes Due to University-Sanctioned Activities."*

Academic integrity

Academic honesty is expected of all students in all examinations, papers, and laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see **http://provost.asu.edu/academic-integrity (http://provost.asu.edu/academic-integrity)**

Accommodating students with disabilities

Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. The DRC Tempe office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at (480) 965-1234 (V) or (480) 965-9000 (TTY). For additional information, visit: **www.asu.edu/studentaffairs/ed/drc (http://www.asu.edu/studentaffairs/ed/drc)** .

Expected classroom behavior

Classroom behavior: Be sure to arrive on time for class. Excessive tardiness will be subject to sanctions. Any disruptive behavior, which includes ringing cell phones, listening to your mp3/iPod player, text messaging, constant talking, eating food noisily, reading a newspaper will not be tolerated. The use of MP3, IPOD, etc. are strictly prohibited during class.

Policy against threatening behavior

All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in