Call for Contributed Talks

Below is a list of topics specific to WM25 that members have proposed to see at the conference. If you think your presentation fits into one of these categories please indicate that in your submission. Otherwise, please use one of the more general Presentations topics below.

21st Century Astronomy and Physics in the Classroom
Share your successes incorporating current research into the undergraduate curriculum! Help others inspire their students with your experience! Either with single lectures on current topics in traditional classes or with the development of special topics classes, tell us what you did, what students learned, and how it went.

Action Research in the K-12 Physics Classroom
In this practitioner-focused session, speakers will share how they incorporate action research into their K-12 physics classrooms.

AI in Physics Education
Artificial intelligence (AI) is all around us, and is a tool increasingly utilized by educators around the globe. Teachers are using it to help refine lesson plans, generate problem sets, and more - creating efficiencies in their work. Students are using AI extensively whether or not teachers are encouraging it, both to help understand content and to search for answers. AI is here to stay, and experts agree that using it as a tool, and teaching students to use it effectively is the way to go. In this session we will hear from educators who are making use of AI in the classroom and learn ways to use it to help with efficiency and learning.

Alternate Certification Paths
There continues to be a shortfall of graduates from traditional physics education programs relative to the demand for physics teachers. Numerous alternative certification programs have been developed over the past three decades and this session will highlight what works and doesn't work with these programs.

Citizen Science in the K-12 Physics Classroom
In this session, participants will learn about opportunities to be involved in authentic scientific research as well as share how they incorporate citizen science projects into their physics classrooms.

Culture-based approaches to physics education: insights from Professional Learning Communities
Dr. Mathis' research group centers around collaborating with secondary and university physics instructors to create cutting-edge curricula and assessments that harness students' cultural resources to optimize their learning of physics concepts. As a pioneering group, the vision is to lead the way in supporting physics teachers to develop and implement equitable practices, enhancing their teacher identity, and ultimately elevating student learning outcomes. In this session, teachers from professional learning communities will share their work on making physics classrooms into more equitable spaces.

Embracing the Dark Side: Teaching Light Pollution Concepts to K-16
This session will center on education and public outreach around light pollution, including the negative impact of light pollution on nocturnal wildlife, humans, the environment, and astronomy. Opportunities to engage students and the public in citizen science to measure light pollution and steps to reduce light pollution will be highlighted.

Implementing NGSS-based practices in physics classrooms
In this session, participants will share how they have implemented Next Generation Science Standards (NGSS) based practices in their physics classrooms.

Innovation in the Physics Classroom
Share your innovations in teaching physics in your classroom. Submissions from all classrooms (ie. K-12, Two-Year College, Intro Level Undergraduate, Beyond Intro Undergraduate, Graduate, Informal) are welcome.

PICUP: Ideas for Integrating Computation into Physics Courses

Have you integrated computational activities into your Physics courses? Come share! From high school to upper-level Physics courses, from short in-class activities to longer projects, from spreadsheets to visualizations to compiled languages. We'd love to hear from you!

Quantum education for workforce development
In this session, we explore recent developments to train the workforce for the second quantum revolution. The US government has indicated that there is a looming shortage of quantum aware and quantum trained workers to help push forward the second quantum revolution in quantum computing, quantum sensing, and quantum communications. In this session, we discuss new ideas and new programs designed to help educate a wide group of students to learn about quantum information science and to prepare them for the future workforce.

Quantum Education Promotion (QEP): Initiatives and challenges in undergraduate programs
Quantum education can help students participate more, understand better, become active in novel fields, and develop important skillset in learning using heuristic approaches such as critical thinking, quantitative analysis, self-assessments and evaluations, and reflections respectively. The proposed QEP session aims to explore design and structure of the efficient interdisciplinary programs in QISE and its adjacent fields in Quantum, Cyber Security (CS), and Artificial Intelligence (AI) respectively, developed at the undergraduate levels at various institutions including 2-year and 4-year colleges in STEM. Furthermore, the session helps the participants to understand practical applications in cutting edge technologies in Quantum such as Quantum Computing, Quantum Sensing, Quantum Cryptography, and Quantum Communication etc.

Teacher Induction Programs - Physical Science Perspective
Teacher Induction Programs are common for recently hired science teachers with an expected outcome of strengthening their instructional practice and ultimately improving student learning. Many programs include a mentor, usually an experienced teacher in the same field that works with the new teacher. This session will examine these programs' impact on physics teachers, mentors and the courses taught by these instructors.

Teaching the Introductory Physics for Life Sciences (IPLS) Course (POSTERS)
This session is one of a continuing series of presentations focusing on teaching physics of the life sciences. The session begins with several invited speakers and transitions to a mini-poster session of contributed posters. Talks and posters focus on pedagogical innovations, authentic laboratories, and life science content of the physics courses for the life sciences. The mini-poster session serves as a gathering for the IPLS community to meet and discuss.

Unlikely Pairings with Physics
This session will explore unlikely pairings between physics and other disciplines such as psychology, art, history, and woodworking, to name a few. Contributors will share examples of exploring these pairings in their physics classrooms. Participants will be inspired to try something new and cool!

General Call for Contributed Talks & Posters

Below is a list of general topics we commonly see at the meeting. If you are not sure that your presentation would fit into any topic in the more specific call above, consider submitting it under one of these more general topics.

1. Astro
2. K-12
3. Intro & Beyond
4. Two Year Colleges
5. Labs/Apparatus
6. Educational Technology
7. DEI
8. Teacher Preparation
9. Physics Education Research
10. Quantum

11. Other