NATIONAL INSTITUTE on Scientific Teaching

Topics for Addressing Challenges in Teaching
Summer 2026

- **AI in the Classroom**
  - **Academic Integrity in the Age of AI** This group could choose to focus on topics such as: How do we redefine academic integrity when AI use is widespread and often appropriate? What constitutes acceptable versus inappropriate use? How can we create clear, enforceable, and educational policies? What are the limitations of AI detection tools, and how should faculty respond?
  - **AI Literacy for Faculty and Students** What foundational knowledge about artificial intelligence do instructors and students need? How do tools like ChatGPT, Claude, or Gemini actually work at a high level? What are their limitations, biases, and appropriate use cases? How do we teach students to critically evaluate AI-generated content?
  - **AI and Assessment Alignment** How do we align learning objectives, teaching strategies, and assessment in an AI-rich environment? What skills remain uniquely human and should be emphasized? How can we assess process, reasoning, and metacognition rather than just final products?
  - **Designing Assignments for an AI-Enabled Environment** How should assignments evolve in response to widespread AI use? What types of assignments promote original thinking, process documentation, and deeper engagement? How can we design tasks that incorporate AI as a tool rather than treat it solely as a risk? What role do drafts, reflections, or oral components play?
  - **AI as a Teaching Assistant** This group could choose to focus on topics such as: How can AI tools support instruction through feedback, tutoring, or content generation? In what ways can AI reduce instructor workload without reducing quality? How can AI be used to scaffold student learning, provide formative feedback, or simulate office hours? Where are the limits of relying on AI support?

- **Active Learning**
  - **Group Work** This group could choose to focus on topics such as: Suggested topics include: How can I create either in-person or online learning experiences where students participate in, enjoy, and benefit from group work? How can I address the challenges of group learning? What tools facilitate productive group work? How can I implement play-based activities or gamification?
  - **Inquiry-based and CURE Lab Courses** How can I design introductory labs so that all students learn skills such as experimental design, hypothesis generation,

and data analysis? How do I get started with a CURE and decide which is best for my learning goals? How do I adapt other people's CURE activities to my learning context? Improving existing CURE labs based on current literature?
    - **Developing critical thinking skills for today's student** How can we help students develop those skills that are fundamental to being a scientist? Where are the biggest gaps and what strategies can help us to enable all students to enhance their problem-solving abilities?

- **Inclusivity**
    - **Universal design or bridging the gap to teach students with variable skills** How is this generation of students different, and how do I adapt my pedagogy to meet them where they are? How do I form a meaningful community of learners that includes students with many backgrounds, perspectives, and lived experience? How can I support first-generation or transfer students? What skills are most important to focus on?
    - **Building student ownership of the learning experience** How can we encourage students to take ownership of their learning, become strong and resilient learners, and move beyond a transactional approach to course work? What metacognitive strategies would help students to understand their experience more deeply?
    - **Teaching with others (team-teaching, multi-section, TAs, LAs)** How do I work with fellow instructors when teaching the same course or separate sections of a multi-section course? How can we balance productive collaboration with instructors' ownership of their courses? How do we effectively train and support teaching and learning assistants? What type of peer learning might be most beneficial for my course and context?

- **Assessment**
    - **Grading Strategies** This group could choose to focus on topics such as: What strategies might I employ to change the culture around grading? How could I use alternatives to traditional grading, such as mastery, specifications, or threshold grading? How can I ensure my grading practices be consistent with a culture that promotes students' curiosity, excitement, sense of adventure, and academic integrity? When implementing upgrading, how can I ensure that students utilize the feedbacks given to them?