

2 days / 16 hours Course Designed by: Kristy Owens & Jeanne Neff, STEM PROS™

Course Description

Transform your Life Science and Biology teaching in just 2 days! Immerse yourself in hands-on professional development experience designed to elevate your instruction across a wide range of life science topics, from ecosystems and cells to human body systems and physiology. Whether you're a new educator or a seasoned veteran, this 2-day course will empower you with innovative strategies to bring Biology, Anatomy & Physiology, and K-8 Life Science to life, while also integrating connections to Physical Science and Physics for a well-rounded approach. Here's what you'll gain:

- 8 hours of hands-on investigations exploring biological concepts, the physics of living systems, and anatomy & physiology applications, while integrating AI-driven lesson planning and interactive digital tools.
- **4 hours of deep-dive science content exploration,** enhancing your core biological principles, human body systems, environmental science, and physical science applications. Learn expert-led strategies for making complex concepts accessible and exciting to all learners.
- **4 hours of interactive skill-building** on science literacy, inquiry-based learning, and using Al and digital tools to create student-centered lessons that bridge Life Science with Physical Science and real-world STEM.

Learn how to make Life Science and STEM irresistibly fun **without expensive equipment**, and discover practical, budget-friendly strategies to build a top-tier science classroom. Participants will also gain **exclusive access to the course Google Classroom** to extend their learning.

Target Audience

This course is designed for **K-12 science teachers** looking to expand instructional strategies and boost student engagement. It's ideal for Biology, Life Science, and Anatomy & Physiology educators seeking fresh ways to teach complex concepts, as well as K-8 teachers building strong life science foundations. **Comprehensive science teachers** who incorporate biological applications will also benefit.

Instructional coaches will gain effective methods to support science educators, while **administrators** will explore strategies to enhance Life Science and interdisciplinary STEM programs.

Aligned to standards, this course provides adaptable strategies for both public and private school educators in any classroom setting.

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Course Goals

This 2-day interdisciplinary Life Science professional development course is designed to:

- Enhance teachers' expertise in key biological concepts, ecosystems, human anatomy & physiology, and life systems, while also exploring interdisciplinary connections to Physical Science and Physics through hands-on investigations.
- Empower teachers to share innovative ideas and practices with peers and strengthen their school's Life Science and STEM programs.
- Equip teachers with AI tools for lesson design, lab activity creation, and integrating digital resources, ensuring engaging, student-centered instruction across K-12 Biology, Life Science, A&P, and elementary science classrooms.
- Refine teaching strategies, inquiry-based instruction, and classroom management for more efficient lesson planning and curriculum development.
- Integrate literacy strategies to enhance science comprehension and develop students' ability to analyze, interpret, and communicate scientific ideas effectively.
- Provide cost-effective teaching materials, lab setups, and online resources for creating engaging and accessible hands-on experiences in Life Science, Biology, and A&P.
- Boost student performance and refine assessment methods.
- Foster a collaborative network of K-12 science educators, encouraging resource-sharing, crossgrade articulation, and interdisciplinary connections.

Learning Outcomes

By the end of this course, participants will be able to:

- Develop lesson plans using the 5E model (engage, explore, explain, elaborate, evaluate).
- Incorporate AI tools to enhance lesson planning and activity creation.
- Design lessons with cross-curricular collaboration and vertical articulation in mind.
- Design highly engaging and effective laboratory activities on a shoestring budget.
- Set up and manage a Google Classroom to streamline assignments, quizzes, & resource sharing.
- Model effective teaching techniques for colleagues.
- Develop an effective formative and summative assessment system.
- Organize and equip an efficient classroom for engaging and effective science instruction, including Life Science, Biology, Anatomy & Physiology, and Physical Science.
- Design and plan hands-on activities for various grade levels for the entire school year!
- Plan and schedule in-house Life Science field trips, Family Nights, and camps that support student learning.



Required Course Materials

- Notebook
- Pencils/Pens
- Laptop computer
- Gmail account
- Tennis shoes

Grading

To receive full credit, all participants must:

- Attend all sessions and actively participate in hands-on activities.
- Collaborate with peers to design and present one lesson using the 5E Model. Teachers are encouraged to refer to the hands-on activities and demonstrations used during the course in their lesson plans.

Documentation, including sign-in sheets and certificates of completion, will be provided to schools and certifying organizations upon successful completion of the course.

Classroom Use of Course Materials

All participants are authorized to access lesson plans, demonstration design plans, the Google Classroom for this specific course, and resources provided after the completion of this course to use in their own classrooms and schools. Some resources and design plans from this course are subject to copyright laws and may **not** be reproduced outside of a participant's school, may **not** be posted to a website, and may **not** be used for future monetary gain.



Class Schedule*

<u>Day One</u>	<u>Start</u>	End	
Morning	8:30 AM	9:00 AM	Sign-in, Technology Setup, and Introductions
Session	9:00 AM	10:00 AM	Crime Scene Investigation
	10:00 AM	10:30 AM	Behind the Tape: Implementing CSI in the Classroom
	10:30 AM	11:00 AM	Simulation #1
	11:00 AM	12:00 PM	The Blueprint for Student Success (5E Model + Science Literacy)
	12:00 PM	12:30 PM	Lunch
Afternoon	12:30 PM	1:30 PM	STEAM Activity
Session	1:30 PM	2:00 PM	Fueling Curiosity: Science in Motion
	2:00 PM	3:00 PM	Lab Experience #1
	3:00 PM	3:30 PM	Al-Powered Lessons: Bringing Science to Life
	3:30 PM	4:30 PM	STEM Activity #1
	4:30 PM	5:00 PM	From Questions to Discoveries: Student-Centered Science
<u>Day Two</u>	<u>Start</u>	End	
Morning	8:30 AM	9:30 AM	Trial by Experiment: Lab Explorations That Engage
Session	9:30 AM	10:30 AM	Lab Experience #2
	10:30 AM	11:00 AM	Simulation #2
	11:00 AM	12:00 PM	From Clues to Conclusions: Hands-on Science in Action
	12:00 PM	12:30 PM	Lunch
Afternoon	12:30 PM	1:30 PM	STEM Activity #2
Session	1:30 PM	2:00 PM	The Science Behind the Spectacle
	2:00 PM	2:30 PM	STEM Stories: Building Literacy in Science
	2:30 PM	3:30 PM	STEM Activity #3
	3:30 PM	5:00 PM	Lesson Presentations & Feedback

*We reserve the right to modify the schedule to add additional activities not scheduled, as time permits, to meet the needs and requests of participating teachers.

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Content Knowledge

ALL activities, content knowledge demonstrations, and lessons will include key concepts, reference materials, and hands-on investigations.

Content knowledge instruction includes, but is **not limited** to:

- Foundations of Life Science (K-8 & Beyond)
- Nature to Science
- Biochemistry
- Cell Biology
- Cellular Processes
- Genetics
- Ecology
- Diversity of Life
- Human Body Systems
- Microbiology
- Biotechnology
- Plant Biology
- Behavior and Animal Systems
- Physics & Life Science Connections:
 - Biomechanics & Motion
 - Fluid Dynamics in Physiology
 - Medical Science & Biophysics