UNI Science Education Update Conference [Program] April 1, 2022

University of Northern Iowa Science Education Program.

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**UNI Science Education Update Conference**  
**April 1, 2022**  
**Agenda**

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<thead>
<tr>
<th>Time</th>
<th>Session Title/Description</th>
<th>Location</th>
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<tr>
<td>8:30 AM</td>
<td><strong>Check In, Continental Breakfast, &amp; Exhibits</strong></td>
<td>Commons Ballroom</td>
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<tr>
<td>9:00 AM</td>
<td><strong>Welcome &amp; Introductions</strong></td>
<td>Commons Ballroom</td>
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<td></td>
<td>John Fritch, Dean of College of Humanities, Arts &amp; Sciences</td>
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<td>Larry Escalada, Director of Science Education</td>
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<tr>
<td>9:05 AM</td>
<td><strong>Key Note Presentation</strong></td>
<td>Commons Ballroom</td>
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<td><em>Are You Using Your Keys to Unlock Science Innovation?</em></td>
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<td>Dr. Robert Good, UNI alumnus and Medical Director of Medical Management of Carle Health System and Professor of Medicine at University of Illinois Carle Illinois College of Medicine</td>
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<tr>
<td>10:00 AM</td>
<td><strong>Morning Extended Sessions – See Sessions – Pick One</strong></td>
<td>Locations Vary</td>
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<tr>
<td>11:30 AM</td>
<td><strong>Lunch/Networking Focus Groups/Exhibits</strong></td>
<td>Commons Ballroom</td>
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<td><em>Jose Herrera, Provost and Executive Vice President for Academic Affairs</em></td>
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**Networking Focus Groups:**  
UNI Computer Science Endorsement Program  
UNI MA in Science Education  
UNI Physics Endorsement Program  
Teacher Externships  
Science Competitions

**Exhibits:**  
Green Iowa AmeriCorps, Iowa Academy of Science, Iowa Conservation Education Coalition, Iowa Department of Natural Resources, Northeast Iowa Regional STEM Hub, MicroTech Microscope Sales & Service, Teacher Institute for Evolutionary Science and ScienceSaves, UNI Computer Science, UNI Physics, UNI Science Education, UNI STEM Support Services, UNI Tallgrass Prairie Center, Vernier Software

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>1:00 PM</td>
<td><strong>Afternoon Session #1– See Sessions – Pick One</strong></td>
<td>Locations Vary</td>
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<tr>
<td>2:00 PM</td>
<td><strong>Afternoon Session #2– See Sessions – Pick One</strong></td>
<td>Locations Vary</td>
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<tr>
<td>3:00 PM</td>
<td><strong>End of Conference</strong></td>
<td>Commons Ballroom</td>
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<td></td>
<td>Refreshments, Evaluations, Door Prizes, &amp; Farewells!</td>
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Key Note Presentation: (9:05 am – 9:50 am)

Are You Using Your Keys to Unlock Science Innovation?

Commons Ballroom
Dr. Robert Good, UNI alumnus and Medical Director of Medical Management of Carle Health System and Professor of Medicine at University of Illinois Carle Illinois College of Medicine
95% of all scientists and medical innovators have something in common. This talk will explore the consistent finding.

Sessions

Morning Sessions #1: (10:00 am – 11:20 am)

How to Integrate STEM in Your Classroom with NGSS FOSS
McCollum Science Hall 112
Larry Escalada, UNI Director of Science Education, and Alison Beharka, UNI Science Education Instructor and SERC Supervisor
STEM Enrichment NGSS Modules including Variables & Design (Grades 6-8), Sound & Design (Grades 3-5), and Forces in Action (Grades K-2) are now available. Join us as we explore these STEM Enrichment NGSS Modules and discuss how they can be used in your classroom. NGSS Modules Observing Nature (Grade Pre-K) and Weather and Seasons (Grade K) will also be available to be explored and reviewed.

Session 1: Is there life in space? How do we find exoplanets? (10:00 am – 10:40 am)
Session 2: Make science concrete! (10:45 am – 11:20 am)
McCollum Science Hall 118
DeEtta Anderson, Center Point Urbana High School Science Teacher
Two separate sessions are being presented. You can attend one or both sessions. In the first hands-on session, participants will simulate the transit method of finding exoplanets by looking at star dimming. This activity uses accessible materials and shows students how scientists look for habitable planets outside our solar system. In the second session, participants will learn how students use the scientific method to make concrete samples and test them for strength. Students love doing this while learning about a natural resource important to Iowa. Student-made concrete samples will be shared. Appropriate for both Earth and Physical Sciences.

Iowa PBS Iowa Science Phenomena
Rod Library 324
Tiffany Morgan, Instructional Media Coordinator for Iowa PBS
Learn how you can start using local phenomena in your classroom today with Iowa PBS Iowa Science Phenomena. This session will introduce educators to the site and service, discuss phenomena-based teaching strategies, and share how teachers can contribute to the user-generated site! Participants are encouraged to bring their device so they can explore the site and tools.

Standard-Based Grading in Science: Taking Your Next Steps
Rod Library 301
Matt Townsley, UNI Assistant Professor of Educator Leadership, and Dawn Posekany, Solon High School Science Teacher
In this session, two seasoned educators will share their experiences implementing standard-based grading. Following a brief introductory presentation, participants will be provided time to ask questions.
Afternoon Sessions #1: (1:00 pm – 1:50 pm)

WILD About Critters
*McCollum Science Hall 112*
Barb Giger, Aquatic Education Coordinator, Iowa Department of Natural Resources
The session will be targeted to elementary educators. It will include some quick engaging activities for teaching about animal groups, adaptations, and habitats from the national award-winning Project WILD and Aquatic WILD resources. I will also share links to additional online resources including age appropriate books, Iowa's natural resources, and outdoor observation and investigation.

Anchoring Phenomena with Light and Contact Forces
*McCollum Science Hall 118*
Larry Escalada, UNI Director of Science Education, and Alison Beharka, UNI Instructor and SERC Supervisor
OpenSciEd is a curriculum designed for the NGSS based on science storylines, phenomena-based, coherent from students’ perspective, driven by evidence, collaborative, and equitable. Instructional units for Grades 6-8 are available and will expand to include elementary through high school. Experience anchoring phenomena from Grade 6.1 Light & Matter and Grade 8.1 Contact Forces. UNI Science Education will be supporting the use of OpenSciEd with resources and future professional development.

A Twofold Approach to Addressing Under-Representation in Science
*Rod Library 301*
Matt Harding, Iowa City West High School Science Teacher
I teach in one of the largest public school districts in Iowa, and have always been bothered by how the demographics of my course rosters differ significantly from the diverse enrollment at my school. My talk will address some of what can be done to reduce gate keeping that limits opportunities for students that might not typically take courses like AP Physics, how I have managed to push-in to our ELL introductory science course with many of the same activities that I use in my grade level and AP physics courses, as well as my experience with AIP's STEP UP program and the Underrepresentation in Physics curriculum. Participants will be provided with resources that they can take back to their own science classrooms and implement right away.

STEM Problem-Based Learning for a Diverse Classroom of Learners
*Rod Library 324*
Maria Hasken-Averkamp, Educational Support Services Manager, Jacobson Institute, University of Iowa
Engage in a hands-on, minds-on activity to engage ALL learners in the practices and concepts of science while employing a culturally responsive project-based learning framework. Session for middle school and high school science teachers.
Afternoon Sessions #2: (2:00 pm – 2:50 pm)

The Iowa Secondary Energy Curriculum (ISEC) Project - Update on New Curriculum  
McCullum Science Hall 112  
Kyle Gray, UNI Associate Professor of Earth & Environmental Sciences and Science Education  
The ISEC Project has developed 10 units that use Iowa's electrical energy needs as the phenomenon through which students address several earth science standards. I will preview some of the units and describe an opportunity for you to participate this summer.

The Teacher Institute for Evolutionary Science (TIES)  
McCullum Science Hall 118  
Kristine Swartchick, Teacher Institute for Evolutionary Science  
The Teacher Institute for Evolutionary Science (TIES) informs interested middle school science teachers about the most up-to-date concepts of natural selection, common ancestry, and diversity for them to confidently cover the topics in their classrooms and fulfill their curriculum requirements. TIES provides science teachers with innovative professional development opportunities, often in collaboration with biology professors and scientists researching current evolutionary trends. TIES also has ready-to-use online resources for the classroom, including presentation slides, labs, guided reading assignments, and an exam. All free! During the presentation, our presenter will model how to use our free slide presentation in the classroom. It is filled with hands-on activities, engaging videos, and labs which focus on science inquiry. Our website has dozens of free resources organized by standard (www.tieseducation.org). We connect science teachers with the experts in the field of evolutionary biology, both in person and online. We also offer free monthly webinars! Our staff also provides teachers with an email helpline if they have questions or are looking for specific lessons. Our project is run entirely by teachers themselves because promoting teacher leadership is one of our goals.

Down For The Count - Rumford, That Is  
Lang 243  
Jeff Morgan, UNI Associate Professor of Physics & Science Education  
Experience a PRISMS Plus activity that builds understanding of the energy transformations from gravitational work to heat using a few simple materials. Participants will build a device for converting mechanical energy into heat, and use temperature probes and appropriate calculations to determine the efficiency of the device. This activity builds foundational knowledge required for several of the Next Generation Physical Science Energy Standards at both the middle and high school levels.

Chemistry: The Dead Zone and Solubility  
Rod Library 324  
Holly Garcia, Adel DeSoto Minburn High School Chemistry Teacher  
Use the Dead Zone in the Gulf of Mexico as a phenomenon for understanding ionic compounds, solutions, solubility rules, and predicting the outcomes of a chemical reaction (NGSS PS-1-2). At the end of this unit, students engineer a filtration system to remove pollutants and dissolved ions from contaminated water. This unit is designed to be taught during the first semester of an on-level Chemistry class (prior to stoichiometry).