

**Arequipa Nexus Institute Workshops**  
**Purdue University**  
**July 22 - August 2, 2019**



| Sunday, July 21 |  | LOCATION                        |
|-----------------|--|---------------------------------|
| ~ 1 - 2 pm      | <b>UNSA participants arrive at Chicago O'Hare Airport</b>  |                                 |
| 5:00-6:30 pm    | <b>Dinner at Earhart Dining Court</b>  |                                 |
| 6:30-7:00 pm    | <b>UNSA Participants' Orientation Meeting, Registration</b>  | First Tower,<br>Conference room |
| Monday, July 22 |  |                                 |
| 9:00-10:00 am   | <b>"Welcome, Opening Remarks"</b><br>Dr. Tomas Diaz de la Rubia, Chief Scientist & Executive Director, Discovery Park<br>Dr. Henry Polanco, Co-Director Arequipa Nexus Institute<br>Dr. Tim Filley, Co-Dir Arequipa Nexus Institute, Dir. Center for the Environment | WTHR 172                        |
| 10:00 am        | <b>"DURI Presentations"</b><br>Three groups of DURI students   | WTHR 172                        |
| 11:00-11:15 am  | <b>Break (coffee/refreshments)</b>   | WTHR 172                        |
| 11:15-11:30 am  | <b>"Introduction to the New UNSA Stable Isotope Facility"</b><br>Dr. Juan Lopa, Professor, Chemistry Department, UNSA  | WTHR 172                        |
| 11:30-11:45 pm  | <b>"Introduction to the New UNSA ICP MS"</b><br>M.Sc. Adriana Larrea, UNSA   | WTHR 172                        |
| 11:45-12:00 pm  | <b>"Introduction to the New UNSA Surface Characterization facility"</b><br>Dra. Corina Vera, UNSA  | WTHR 172                        |
| 12:00-1:15 pm   | <b>Lunch Ford Dining Court</b>   |                                 |
| 1:30-3:20 pm    | <b>"Nexus Projects Overview", PI Presentations</b>   | WTHR 172                        |
| 1:30-1:40 pm    | Toward Clean Water: Avoid Intrusion of Contaminants into Water Systems   |                                 |
| 1:40-1:50 pm    | Develop and deliver undergraduate/graduate courses on Sustainable Dev. at UNSA   |                                 |
| 1:50-2:00 pm    | Seasonal Heavy Metal Concentrations in Streams in the Arequipa Region  |                                 |
| 2:00-2:10 pm    | Determining the sources of particulate air pollution in Arequipa, Peru   |                                 |
| 2:10-2:20 pm    | Equitable Co-existence of Agriculture, Mining, and Regional Development in Arequipa  |                                 |
| 2:20-2:30 pm    | Robotic Water Quality Monitoring and Distribution Systems  |                                 |
| 2:30-2:40 pm    | Capacity Strengthening for Postharvest Handling and Storage in Peru  |                                 |
| 2:40-2:50 pm    | Arequipa Region Soil Vulnerability, Impairment, and Health Assessment  |                                 |
| 2:50-3:00 pm    | Development of Good Agricultural and Manufacturing Practices Trainings for Growers and Food Processors in Arequipa, Peru   |                                 |
| 3:00-3:10 pm    | Net Zero Energy Building   |                                 |
| 3:10-3:20 pm    | Develop and deliver undergraduate/graduate courses on Energy Efficiency at UNSA  |                                 |
| 3:20-3:30 pm    | <b>Break</b>   |                                 |
| 3:30-5:20 pm    | <b>"Nexus Projects Overview", PI Presentations</b>   | WTHR 172                        |
| 3:30-3:40 pm    | Plant-microbe interactions in agricultural soils with heavy metals contamination   |                                 |
| 3:40-3:50 pm    | UNSA's Agricultural Experiment Station: A Strategic Plan   |                                 |
| 3:50-4:00 pm    | Integrated Sensing Systems for Detection of Heavy Metal Contamination Across Food-Water-Environment Nexus in Arequipa  |                                 |

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| 4:00-4:10 pm | Development of low heavy metal, nutritious processed foods from Arequipa-area staple crops with potential novel health attributes        |
| 4:10-4:20 pm | A Framework for Sustainable Water Management in the Arequipa Region  |
| 4:20-4:30 pm | Estimating relative inputs of glacial melt-water, groundwater, and irrigation runoff in rivers of Arequipa, Peru                         |
| 4:30-4:40 pm | Elevating the Peruvian Grape and Wine Industry into a Global Competitor through Advancements in Sustainable Agriculture                  |
| 4:40-4:50 pm | A Purdue-UNSA Initiative to Establish a Center on Food Security in Peru - Pilot Project  |
| 4:50-5:00 pm | Harnessing Luminescent Radiation from Solar Cells for Agricultural and Environmental Monitoring  |
| 5:00-5:10 pm | Nexus Crops CRISPR and Phenomics: Individual and Institutional Capacity Building for Crop Science at Universidad Nacional de San Agustin |

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| 6:00-8:00 pm | <b>Welcome Dinner</b> | PMU, East West Faculty Lounge |
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| 6:00-6:15 | <b>Group Photo</b> |
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### Tuesday, July 23

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| 9:00-12:00 am & 1:30-4:30 pm | <b>"Water Origins: groundwater and surface-water in mountainous watersheds/isotopic and geochemical techniques used to infer hydrological and hydrogeological processes"</b><br>Dr. Lisa Welp, Professor, Dept. Earth, Atmospheric & Planetary Sciences<br>Dr. Marty Frisbee, Professor, EAPS | HAMP 2201 |
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|  | <b>"Arequipa Air Quality (ARQ) group: using Kintecus and box models in chemistry and air quality applications"</b><br>Dr. Greg Michalski, Professor, EAPS<br>Dr. Kento Magara-Gomez, Research Assistant, Nexus | WALC 3122 |
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|  | <b>"CRISPR/Biotechnology: theories and hands-on practice"</b><br>Dr. Mohsen Mohammadi, Professor, Agronomy | LILY 2-431 |
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| 10:30-11:30 am | <b>Break (coffee/refreshments)</b> | WALC 3127 |
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| 8:00 am-1:00 pm | <b>"Soybean Showcase"</b><br>Dr. Marshall Martin, Professor, Agricultural Economics<br>Amanda Dickson, International Programs in Agriculture | Off Campus |
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| 12:00-1:15 pm | <b>Lunch Ford Dining Court</b> |  |
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| 1:30-4:30 pm | <b>"AES Team Meeting"</b><br>Dr. Marshall Martin, Professor, Agricultural Economics<br>Amanda Dickson, International Programs in Agriculture | WALC 1087 |
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| 9:00 am-5:30 pm | <b>"Visit to Southwest Purdue Agricultural Center (SWPAC)"</b><br>Dr. Amanda Deering, Professor, Food Sciences<br>Dr. Charles Woloshuk, Professor, Bothany & Plant Pathology | SWPAC |
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| 6:30-8:30 pm | <b>Orientation for "Landscapes, Soils, Agriculture, and Shopping in Northwest Indiana" (<u>*prerequisite for Sat. 27 Field Trip</u>)</b><br>Dr. Darrell Schulze, Professor, Soil Science | Morgan 121 |
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### Wednesday, July 24

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| 9:00-12:00 am &<br>1:30-4:30 pm | <b>"Water Origins: Water balance in mountainous watersheds"</b>   | HAMP 2201                 |
|                                 | Dr. Lisa Welp, Professor, EAPS<br>Dr. Marty Frisbee, Professor, EAPS  |                           |
|                                 | <b>"Arequipa Air Quality (ARQ) group: Using and Applying HYSPLIT trajectory models"</b>   | HAMP 4247                 |
|                                 | Dr. Greg Michalski, Professor, EAPS<br>Dr. Kento Magara-Gomez, Research Assistant, Nexus  |                           |
|                                 | <b>"CRISPR/Biotechnology: theories and hands-on practice"</b>   | LILY 2-431                |
|                                 | <b>"SWM team meeting"</b>   | WALC 3087                 |
|                                 | Dr. Laura Bowling, Professor, Agronomy; SWM team  |                           |
|                                 | <b>"Methods for Analyzing Microbial Activity and Abundance in Soils"</b>  | LILY 3-120                |
|                                 | Dr. Abigail Tomasek, Research Assistant, Nexus  |                           |
|                                 | <b>"Shiva Meeting"</b>  | HAMP 3201                 |
|                                 | Dr. Tim Filley, Professor, EAPS   |                           |
| 10:30-11:30 am                  | <b>Break (coffee/refreshments)</b>  | WALC 3132                 |
| 8:00 am-12:00 pm                | <b>"Tour TPAC and Meigs"</b>  | Off Campus                |
|                                 | Dr. Marshall Martin, Professor, Agricultural Economics  |                           |
|                                 | <b>"Sensor Design &amp; Development: Monitoring Soil Health"</b>  | Innovation Center<br>ACRE |
|                                 | Dr. Daniel Leon-Salas, Professor, Purdue Polytechnic Institute<br>Dr. Cliff Johnston, Professor, Crop, Soil and Environmental Sciences<br>Dr. Zachary Brecheisen, Research Assistant, Nexus<br>Dr. Jino Ramson, Research Assistant, Nexus |                           |
| 12:00-1:15 pm                   | <b>Lunch Ford Dining Court</b>  |                           |
| 1:30-4:30 pm                    | <b>"AES Team Meeting"</b>   | WALC 3138                 |
|                                 | Dr. Marshall Martin, Professor, Agricultural Economics<br>Amanda Dickson, International Programs in Agriculture   |                           |
| 1:30-4:30 pm                    | <b>"Sensor Design &amp; Development: Water Quality &amp; Smart irrigation"</b>  | WALC 1018                 |
|                                 | Dr. BC. Min, Professor, Purdue Polytechnic Institute<br>Dr. Suranjan Panigrahi, Professor, Electrical & Computer Engineering Technology<br>Dr. Yogang Singh, Research Assistant, Nexus  |                           |
| 6:00-9:00 pm                    | <b>"All Fired up" (pottery painting class)</b>  | Off Campus                |
| <b>Thursday, July 25</b>        |   |                           |
| 9:00-12:00 am &<br>1:30-3:30 pm | <b>"CRISPR/Biotechnology: theories and hands-on practice"</b>   | LILY 2-431                |
|                                 | Dr. Mohsen Mohammadi, Professor, Agronomy   |                           |
|                                 | <b>"Stable Isotope Ratio Monitoring in the Environment: Theory and Application-1"</b>   | HAMP 2201                 |
|                                 | Dr. Tim Filley, Professor, EAPS<br>Dr. Greg Michalski, Professor, EAPS  |                           |
| 8:00am - 4:30 pm                | <b>"Tippy County 4-H Fair "</b>   | Off campus                |

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|                          | Amanda Dickson, International Programs in Agriculture   |                    |
| 10:00am-12:00 pm         | <b>"Summer Undergraduate Research Symposium"</b>  | PMU South Ballroom |
| 10:30-11:30 am           | <b>Break (coffee/refreshments)</b>  | WALC 3132          |
| 12:00-1:15 pm            | <b>Lunch Ford Dining Court</b>  |                    |
| 1:00-3:15 pm             | <b>"Molecular methods for quantifying the composition and activity of soil and plant microbiomes"</b>   | HORT 217           |
|                          | Dr. Lori Hoagland, Professor, Horticulture & Landscape Architecture<br>Dr. Alejandro Rodriguez-Sanchez, Research Assistant, Nexus<br>Dr. Narda Silva, Research Assistant, Nexus |                    |
| 3:30-6:00 pm             | <b>"Nexus Poster Presentations"</b>   | STEW 218ABCD       |
| <b>Friday, July 26</b>   |   |                    |
| 8:00-10:00 am            | <b>"Strategies for Successful Research Development &amp; Grant Preparation"</b>   | WALC 1087          |
|                          | Dr. Lynne Dahmen, C4E Managing Director   |                    |
| 10:00-10:30am            | <b>"Introduction to the plans of the new Nexus CIEPA research building"</b>   | WALC 1087          |
|                          | Dr. Daniel Leon-Salas, Professor, School of Engineering Technology, Purdue  |                    |
| 10:30-11:30 am           | <b>Break (coffee/refreshments)</b>  | WALC 3132          |
| 8:00 am-12:00 pm         | <b>(8:30 - 10:00 am) Ag. Alumni Seed Improvement Assoc.<br/>(10:15 - 11:45 am) Indiana Crop Improvement Assoc.</b>  | Off campus         |
|                          | Dr. Marshall Martin, Professor, Agricultural Economics  |                    |
|                          | <b>"Metal Analysis and Speciation in Water"</b>   | HAMP 3153          |
|                          | Dr. Chad Jafvert, Professor, Civil Engineering  |                    |
| 12:00-1:15 pm            | <b>Lunch Ford Dining Court</b>  |                    |
|                          | <b>"Executive Committee Meeting" - meet at food court</b>   |                    |
| 1:30-4:30 pm             | <b>"AES Team Meeting"</b>   | WALC 1087          |
|                          | Dr. Marshall Martin, Professor, Agricultural Economics<br>Amanda Dickson, International Programs in Agriculture   |                    |
| 1:30-4:40 pm             | <b>"Metal Analysis in Water, Lab"</b>   | HAMP 2146          |
|                          | Dr. Nadya Zyaykina, Lab Manager, Env. & Ecological Engineering<br>Dr. Alex Ccanccapa, Research Assistant, Nexus   |                    |
| 6:30-9:00 pm             | <b>"Visit to Wolf Park"</b>   | Off Campus         |
| <b>Saturday, July 27</b> |   |                    |
| 7:00 am-5:30 pm          | <b>"Landscapes, Soils, Agriculture, and Shopping in Northwest Indiana"</b>  | Off campus         |
|                          | Dr. Darrell Schulze, Professor, Soil Science  |                    |
| 11:30 am-2:00 pm         | <b>"Shopping/Lunch at Michigan City Outlet Mall Indiana"</b>  | Off campus         |
| <b>Sunday, July 28</b>   |   |                    |
| 12:00-1:15 pm            | <b>Lunch Earhart Dining Court</b>   |                    |

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| 3:00-7:00 pm                       | <b>"Picnic at Martin Acres LLC; Peruvian Independence Day"</b><br>All UNSA participants and Purdue guests  | 4840 Hawthorne<br>Ridge Dr. |
| <b>Monday, July 29</b>             |  |                             |
| 9:00-10:30 am                      | <b>"Data Publication and Management -DMP template"</b><br>Dr. Michael Witt, Purdue Libraries   | WALC 3122                   |
| 10:30-11:30 am                     | <b>Break (coffee/refreshments)</b>   | WALC 3121 & HAMP<br>2201    |
| 10:45am-12:00 pm<br>& 1:30-4:30 pm | <b>"Stable Isotope Ratio Monitoring in the Environment: Theory and Application-2"</b><br>Dr. Tim Filley, Professor, EAPS<br>Dr. Janine Sparks, PSI Lab Manager   | HAMP 2123                   |
| 10:45am-12:00 pm                   | <b>"Manuscript Writing Panel"</b><br>Panel coordinated by Dr. Laura Bowling  | WALC 3122                   |
| 12:00-1:15 pm                      | <b>Lunch Wiley Dining Court</b>  |                             |
| 1:30-4:30 pm                       | <b>"Analysis of Nutrients in Water and Soil Extracts"</b><br>Dr. Sara McMillan, Professor, Agricultural & Biological Engineering<br>Dr. Chad Jafvert, Professor, Civil Engineering<br>Dr. Javier Gonzalez, NSERL                   | NSERL                       |
|                                    | <b>AES Team Meeting - Wrap Up</b><br>Dr. Marshall Martin, Professor, Agricultural Economics<br>Amanda Dickson, International Programs in Agriculture   | WALC 3127                   |
|                                    | <b>"Sustainable Urban Agriculture Meeting"</b><br>Dr. Lori Hoagland, Professor, Horticulture & Landscape Architecture<br>Dr. Sara McMillan, Professor, Agricultural & Biological Engineering<br>Dr. Ron Turco, Professor, Agronomy | HORT 217                    |
| 6:00-9:00 pm                       | <b>"Walking around Downtown"</b>   | Off Campus                  |
| <b>Tuesday, July 30</b>            |  |                             |
| 9:00-12:00 am &<br>1:30-4:30 pm    | <b>"Stable Isotope Ratio Monitoring in the Environment: Theory and Application-3"</b><br>Dr. Tim Filley, Professor, EAPS<br>Dr. Janine Sparks, PSI Lab Manager   | HAMP 2123                   |
|                                    | <b>"Air Quality and Water Origins isotope mixing models"</b><br>Dr. Lisa Welp, Professor, EAPS<br>Dr. Greg Michalski, Professor, EAPS  | HAMP 2201                   |
| 10:30-11:30 am                     | <b>Break (coffee/refreshments)</b>   | WALC 3121 & HAMP<br>2201    |
| 8:00 am-12:00 pm                   | <b>"Tour Tippy Extension office; Master Gardener demo gardens; Grow Local gardens"</b><br>Amanda Dickson, International Programs in Agriculture  | Off Campus                  |
|                                    | <b>"Processing and Nutrition Lecture Series"</b><br>Dr. Bruce Hamaker, Professor, Food Sciences  | WALC 1018                   |

Dr. Grethel Choque, Professor, UNSA

12:00-1:15 pm

*Lunch Wiley Dining Court*

1:30-4:30 pm

**"Tour ACRE, Beck, and Phenotyping"**

Off Campus

Dr. Marshall Martin, Professor, Agricultural Economics

1:30-5:15 pm

**"Heavy metals in the food chain: bioavailability, bioaccessibility and potential mitigation strategies"**

NLSN 1195

Dr. Bruce Hamaker, Professor, Food Sciences

Dr. Lori Hoagland, Professor, Horticulture & Landscape Architecture

Dr. Alex Rodriguez-Sanchez, Research Assistant, Nexus

Dr. Yony Roman-Ochoa, Research Assistant, Nexus

Dr. Maria Paula Zea, Research Assistant, Nexus

**"Hands-On Lab Activities for Metal Analysis"**

LILY

Dr. Sara McMillan, Professor, Agricultural & Biological Engineering

Dr. Lori Hoagland, Professor, Horticulture & Landscape Architecture

Dr. Bruce Hamaker, Professor, Food Sciences

**"Hands-On Lab Activities for Mycotoxin Analysis"**

LILY 1453

Dr. Charles Woloshuk, Professor, Bothany & Plant Pathology

**Wednesday, July 31**

9:00-12:00 am &  
1:30-4:30 pm

**"Water Origins and Air Quality Precipitation isotopes and incorporate data analysis"**

HAMP 2201

Dr. Lisa Welp, Professor, EAPS

Dr. Elizabeth Olson, Research Assistant, Nexus

**"Stable Isotope Ratio Monitoring in the Environment: Theory and Application-4"**

HAMP 2123

Dr. Tim Filley, Professor, EAPS

Dr. Janine Sparks, PSI Lab Manager

**"Overview of Food Safety in Growing Operations and Food Production Facilities"**

WALC 1018

Dr. Amanda Deering, Professor, Food Sciences

Dr. Haley Oliver, Professor, Food Sciences

10:30-11:30 am

**Break (coffee/refreshments)**

WALC 3121 & HAMP  
2201

12:00-1:15 pm

*Lunch Wiley Dining Court*

**"Executive Committee Meeting" - meet at food court**

1:30-4:30 pm

**"AES Team Meeting - Wrap Up & Next Steps"**

WALC 3122

Amanda Dickson, International Programs in Agriculture

**"Hands on Lab Activities on Microbiological Techniques for Fungi and Bacteria"**

NLSN 1152

Dr. Deering, Professor, Food Sciences

Dr. Haley Oliver, Professor, Food Sciences

Dr. Charles Woloshuk, Professor, Bothany & Plant Pathology

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| 6:30-9:00 pm                    | "Bruno's Pizza"  | Off Campus                     |
| <b>Thursday, August 1</b>       |  |                                |
| 9:00-12:00 am &<br>1:30-4:30 pm | "Stable Isotope Ratio Monitoring in the Environment: Theory and Application-5"<br>Dr. Tim Filley, Professor, EAPS<br>Dr. Janine Sparks, PSI Lab Manager  | HAMP 2123                      |
| 8:30-11:30 am                   | "Water Engagement in Peru: Needs assessment and discussion of extension & education models"<br>Dr. Laura Bowling, Professor, Agronomy<br>Dr. Edwin Bocardo, Professor, UNSA  | WALC 1087                      |
| 10:30-11:30 am                  | Break (coffee/refreshments)  | WALC 3121 & HAMP<br>2201       |
| 9:00-12:00 am                   | "Postharvest Management"<br>Dr. Dieudonne Baributsa, Professor, Entomology   | SMTH 131                       |
| 12:00-1:15 pm                   | <i>Lunch Wiley Dining Court</i>  |                                |
| 12:00-4:30 pm                   | "Small Farm Education Field Day, Agronomy Center for Research & Education, Postharvest Education and Research Center"<br>Purdue faculty and staff<br><a href="https://purdue.ca1.qualtrics.com/jfe/form/SV_3qQfl05iryF3COp">registration at https://purdue.ca1.qualtrics.com/jfe/form/SV_3qQfl05iryF3COp</a> | Off Campus                     |
| 8:00am-4:30 pm                  | "Small Farm Education Day at Purdue Student Farm"<br>Amanda Dickson, International Programs in Agriculture   | Off Campus                     |
| <b>Friday, August 2</b>         |  |                                |
| 9:30-10:30 am                   | "Tour of PRIME Lab"<br>Dr. Tom Woodruff and Dr. Berdine Martin   | PRIME Laboratory               |
| 10:00-11:00am                   | "Safety Committee Meeting"   | WALC 3087                      |
| 11:00am-12:00pm                 | "Post Doctoral Committee Meeting"  | WALC 1087                      |
| 10:30-11:30 am                  | Break (coffee/refreshments)  | WALC 3121 & HAMP<br>2201       |
| 12:00-1:15 pm                   | <i>Lunch Wiley Dining Court</i>  |                                |
| 9:00am-3:30 pm                  | "Water Engagement in Peru: Needs assessment and discussion of extension and education models"<br>Dr. Laura Bowling, Professor, Agronomy<br>Dr. Edwin Bocardo, Professor, UNSA  | WALC 3087                      |
| 4:00-7:00 pm                    | "Awarding Certificates and Closing Dinner"<br>Minister Franklin Miller Rojas Escalante, Peru General Consul in Chicago   | Dean's Auditorium,<br>PFEN 241 |
| <b>Saturday, August 3</b>       |  |                                |
| 2:30 AM                         | "Check out of PMU travel to O'hare. Back to Arequipa"  |                                |