

		APPLIED SCIENCE & ENGINEERING (ASE) EDUCATION, OUTREACH & PROFESSIONAL DEVELOPMENT (EOPD)	ENERGY SYSTEMS (ES) ERGONOMICS, SAFETY & HEALTH (ESH) INTERNATIONAL (E-2050)	INFORMATION TECHNOLOGY, SENSORS & CONTROL SYSTEMS (ITSC)	MACHINERY SYSTEMS (MS)	NATURAL RESOURCES & ENVIRONMENTAL SYSTEMS (NRES)	PLANT, ANIMAL AND FACILITY SYSTEMS (PAFS)	PROCESSING SYSTEMS (PRS)		
MONDAY, JULY 8	9:30AM to 12 NOON	101 Carbon Materials: Biochar-Hydrochar-Activated Carbons Educational Approaches for Facilitating Digital Agriculture - INVITED 103 104 Thinking Outside the Furrows: Startup Companies are Changing the World - PANEL	102 Conservation Agriculture for Sustainable Intensification - INVITED 105 Current Achievements and New R&D Trends in Renewable Energy Resources and Technologies - INVITED 106 Production, Processing, and Conversion of Algae 107 Value-Added Chemicals and Products and Lignin Valorization 108 Safety Considerations in Agriculture	109 Big Data and Data Analysis for Agricultural Applications 110 Computational Fluid Dynamics (CFD) in Agriculture 111 Discrete Element Modelling (DEM) Applications in Agriculture 112 Imaging Technologies for High Throughput Phenotyping - Part I 113 Machine Vision Applications in Vegetables and Fruits 114 Machine Vision for Precision Agriculture and Robotics	115 Machinery Systems POSTER SESSION	9:30AM-11:00AM 116 Natural Resources & Environmental Systems Distinguished Lecture Series - INVITED 11:00AM-12:00PM 117 ABE Curriculum and Industry Needs in Ecological/Water Resources Engineering: A PANEL DISCUSSION 12:00PM-1:00PM NRES Committee Update	118 Air Emission from Livestock and Poultry Production 119 Emerging Information Systems for Animal Production Systems 120 Indoor Production of Cannabis and Other Medicinal Plants	121 Biochemical Conversion Processes 122 Food Process Engineering - Part I 123 Food Safety Engineering - HYBRID 124 Modeling and Optimization in Food Processing and Storage - HYBRID	9:30 AM to 12 NOON	
	2:30PM to 5:00 PM	127 Wood-Based Processing, Conversion, and Products 128 The Future of Ag Systems Management & Technology Programs - INVITED	125 Sustainable Food- Water- Energy Nexus - INVITED 126 AOCABFE & NERCITA China Exchange Forum - INVITED 129 Advanced and Drop-In Biofuels Production-Biochemical Approach 130 Thermochemical Conversions of Biomass	131 Advanced Computational Approaches for Solving Agricultural and Biological Engineering Problems 132 Imaging Technologies for High Throughput Phenotyping - Part II 133 Machine Vision Applications in Agriculture and Food 134 Material and Molecular Innovations for Chemical and Biological Sensing 135 Sensors and Control Systems for Precision Agricultural Equipment	136 Machinery Data and Task Optimization 137 Precision Aerial Spray Applications: UAV/Drones and Manned Aircraft	138 Advances in Aquacultural Engineering - HYBRID 139 Agricultural Drainage Water Management: Honoring the Career of Dr. Chin S. Tan - INVITED 140 Challenges and Solutions to Declining Water Supplies for Irrigation 141 Environmental and Applied Tracers in Groundwater and Surface Water Systems - HYBRID 142 Implementing Water, Energy, and Food Sustainable Development Goals - INVITED 143 Innovations in Irrigation Systems 144 Manure Treatment Systems 145 National Basin-Scale Water Quality Review: Targets, Trends and Takeaways - INVITED 5:00PM-7:00PM 151 Natural Resources & Environmental Systems POSTER SESSION	147 Agri-Industrial Facility Design and Operation 148 Precision Animal Management	149 Spectral Scattering, Fluorescence, and Raman Technology for Food Quality and Safety 150 Use of Models to Study Crop Drying, Handling and Storage - INVITED	2:30 PM to 5:00 PM	
	9:30 AM to 12 NOON	201 Biologically Inspired Micro- and Nanoengineering Systems for Agriculture and Biological Applications - INVITED 202 Curriculum Design and Student Success	203 Advances in Biomass Preprocessing 204 Renewable Energy Resources and Technologies 205 Strategies for Safety Communication and Education	206 Information Technology, Sensors & Control Systems POSTER SESSION	207 Automated Agriculture Field Machinery Data Collection, Analysis, and Utilization 208 Crop and Soil Sensing 209 Pesticide and Fertilizer Application Technology, Formulation, and Environmental Effects 251 Soil-Plant-Machine Dynamics and Systems Simulation	210 Advances in Applying and Evaluating Hydrologic and Water Quality Models 211 Advances in Drainage Design, Monitoring, and Modeling 212 Anaerobic Digestion 213 BMPs and Water Quality: Modeling 214 Erosion Control Research and Case Studies 215 Innovative Water Quality and Hydrologic Monitoring and Analysis 216 Nutrient Removal, Recovery and Recycle 217 Sustainable Irrigation Management 218 Vulnerability Assessment of Land Resources for Sustainable Development - INVITED	219 Biosecurity for Livestock and Poultry Systems 220 Greenhouse and Nursery Technology	8:00AM-9:00AM PRS Community Update 9:00AM-11:00AM 221 Building Successful Collaborations to Address Challenges in Food and Bioprocess Engineering - INVITED 9:30AM-12:00PM 222 Microwave and Radio-Frequency Energy for Processing 223 Physical Properties Related to Drying and Storage	9:30 AM to 12 NOON	
TUESDAY, JULY 9	2:30 PM to 5:00 PM	224 Applied Science & Engineering POSTER SESSION 226 Improving Student Learning One Course at a Time	225 Resource Development for Agricultural and Biological Engineering Challenges in Africa, China, and India - PANEL 227 Energy Systems POSTER SESSION 228 Ergonomics, Safety and Health POSTER SESSION 5:00PM-7:00PM 250 Technical Trends and Career Opportunities in the U.S. and Korea - INVITED	229 3D Machine Vision for Sensing and Automation 230 Advances in Spectroscopy and Hyperspectral Properties of Biological Products 231 Cloud Computing and Internet of Things in Agriculture 232 Machine Vision Applications in Animals and Animal Products 233 UAV for Sensing, Imaging, and Agricultural Aquacultural Applications - Part I	234 Advances in Cotton Engineering 235 Automation and Robotics for Fruit, Vegetables, and Other Specialty Crops 236 Automation Systems for Agricultural Field Machinery 237 Innovations in Precision Agriculture	238 Advances in Ecosystem Evapotranspiration Research - HYBRID 239 Advances in Irrigation Management 240 Benefits and Challenges of Microirrigation 241 BMPs and Water Quality: Measurements 242 Erosion and Water Quality in Urban Streams and Wetlands - HYBRID 243 Grand Challenges Session - Pesticides in Freshwater Systems: Effects and Mitigation - INVITED *until 5:30pm 244 Managing Manure and Agricultural Byproducts for Sustainability 245 Real-Time Systems to Manage Natural Resources and Environmental Systems 246 Waterborne Pathogens and Emerging Contaminants	247 Animal Response to Environment 248 Measurement, Mitigation and Modeling of Air Pollution from Livestock and Poultry Facilities	249 Processing Systems POSTER Session	2:30 PM to 5:00 PM	
	7:30 AM to 10:00 AM	301 Best Practices in Graduate Programming and Professional Preparation - RAP 302 Dealing with Ethical Issues in Engineering Standards - INVITED	303 Techno-Economic and Life Cycle Assessment of Biomass Conversion 324 Energy Utilization and Lighting in Agricultural Operations and Facilities	304 Novel Data-Intensive Methods to Support Precision Agriculture 305 Robotics and Co-Robotics for Agriculture - Part I 306 UAV for Sensing, Imaging, and Agricultural Aquacultural Applications - Part II	307 Precision Application of Chemicals and Fertilizers	308 Climate Change Impacts and Adaptation: Water Availability and Quality, and Agricultural Production 309 Flooding and Dams: Keeping Communities Safe - HYBRID 310 Hydrologic and Climate Data: Challenges and Opportunities 311 Irrigation Management in Humid and Sub-Humid Regions 312 Low Impact Development and Ecohydrology 313 Modeling of Water Quality and Hydrology 314 Nutrient Transport and Cycling: Measurements 315 Practices for Nutrient Loss Reduction in Drained Landscapes 316 Precision Irrigation	317 Plant, Animal and Facilities Systems Distinguished Lecture Series - INVITED	318 Artificial Intelligence and Data Science (Big Data) in Processing 319 Food Process Engineering - Part II 320 Grain Drying, Storage and Aeration Systems - INVITED 321 Physical Properties Related to Processing and Handling	7:30 AM to 10:00 AM	
WEDNESDAY, JULY 10	10:15 AM to 12:15 PM	322 Education, Outreach and Professional Development POSTER SESSION 343 Publishing in the ASABE Journals: Navigating the Publishing Process and the Future of the Journals	323 Biomass Feedstock Supply Logistics and Modeling 325 Lighting Systems for Plant Production-Standards, Systems, and Science - INVITED	326 Apps in Agricultural Applications 327 Biosensor and Bioelectronics 328 Robotics and Co-Robotics for Agriculture - Part II 329 Sensors and Control Systems for Food Production and Processing	330 Handling, Storage, Transport and Processing of Forages and Biomasses 331 ISO Standards Training - INVITED 332 Precision Agriculture Utilization in Chemical and Fertilizer Applications 2:30PM-6:30PM 344 Autonomous Field Equipment - The Future of Standardization - INVITED	333 Applications of Remote Sensing and UAVs in Irrigation Management 334 CN Hydrology and Alternative Approaches for Runoff Volume or Runoff Rate 335 Defining Ecological Engineering through Practice - HYBRID 336 Denitrifying Bioreactors: Present State and Future Opportunities - RAP 337 Drought and Water Security - HYBRID 338 Measurement and Modeling of Ecosystem Services 339 Nutrient Transport and Cycling: Modeling 345 Sustainability Metrics-Concept, Evaluation, and Advances	340 Plant, Animal and Facilities Systems POSTER SESSION	341 Bioprocess Modeling, Sustainability and Technoeconomic Analysis 342 System Approach to Develop Sustainable Food and Organic Wastes/Byproducts Management Solutions	10:15 AM to 12:15 PM	