

		APPLIED SCIENCE & ENGINEERING (ASE) EDUCATION, OUTREACH AND 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)		
<b>MONDAY, JULY 30</b>	9:30AM to 12 NOON	101 Advanced Wood- and Bio-Composites for Structural and Other Applications 102 Emerging Trends in Biological Engineering - Part 1 103 Forest Based Biomass: Harvesting, Processing, Transport and Storage 104 Lifecycle Analysis of Agricultural Products and Systems	105 Catalytic and Thermochemical Conversion of Biomass - Pyrolysis, Torrefaction and Gasification 106 Production, Processing and Conversion of Algae 107 Renewable Energies 108 Value-Added Chemicals and Products from Biomass 109 Safety Considerations in Agriculture 110 Current Achievements and New R&D Trends in Renewable Energy Resources and Technologies - INVITED	111 Big Data and Data Analysis for Agricultural Applications - Part 1 112 Computational Fluid Dynamics (CFD) Applications in Agriculture - Part 1 113 Imaging Technologies for High Throughput Phenotyping - Part 1 114 Machine Vision Applications in Agriculture and Food - Part 1 115 Robotics and Co-Robotics for Agriculture - Part 1 116 Spectroscopic Sensing and Imaging - Part 1	117 Advances in Cotton Engineering - Part 1 118 Automation and Robotics for Fruit, Vegetables, and Other Specialty Crops - Part 1 119 Autonomous Vehicles and Systems - Part 1 120 Biomass Feedstock Supply Logistics and Modeling 121 Pesticide Formulation Application Technology, Environmental Effects - Part 1 122 Transfer of Concept on Precision Agriculture for Sustainable Global Crop Production - PANEL	9:30AM-10:30AM Water Security Panel Discussion  10:30AM-12:00PM 123 Natural Resources & Environmental Systems Distinguished Lecture - INVITED  12:00PM-1:00PM NRES Committee Update	124 Greenhouse and Nursery Technology 125 Precision Animal Management: Large Animal	126 Advanced Treatment Technology on Food & Organic Wastes/Byproducts Management - Part 1 127 Advances in Spectroscopy and Hyperspectral Properties of Biological Products 128 Biochemical Conversion and Bioprocess Modeling 129 Drying, Handling and Storage - Part 1 130 Food Process and Engineering - Part 1 131 Food Safety Engineering - Part 1 132 Physical Properties and Effect on Drying, Handling and Processing	9:30 AM to 12 NOON	
	2:30PM to 5:00 PM	133 Emerging Trends in Biological Engineering - Part 2 134 Innovations and Integration of Instruction	135 Ergonomics, Safety and Health POSTER Session 136 Advances in Biomass Preprocessing and Pretreatment - Part 1 137 Solutions to Agricultural Water Sustainability and Security in India and Other Developing Countries (AABFEO) Session - INVITED 138 Appropriate-Scale Mechanization to Global Food Security - INVITED	139 Biosensors & Bioelectronics - Part 1 140 Computational Fluid Dynamics (CFD) Applications in Agriculture - Part 2 141 Imaging Technologies for High Throughput Phenotyping - Part 2 142 Machine Vision Applications in Agriculture and Food - Part 2 143 Robotics and Co-Robotics for Agriculture - Part 2 144 Spectroscopic Sensing and Imaging - Part 2	145 Machinery Data & Task Optimization - Part 1 146 Precision Application of Chemicals and Fertilizers 147 Automation and Robotics for Fruit, Vegetables, and Other Specialty Crops - Part 2 148 Crop and Soil Sensing - Part 1	149 Advancements in CN and Runoff Hydrology - Part 1 150 Environmental and Applied Tracers in Groundwater and Surface Water Systems 151 Erosion Mechanics and Prediction 152 Agricultural Drainage: Past, Present and Future - Honoring the Career of Dr. Norm Fausey - INVITED 153 Advances in Surface Irrigation and Rice Production Benefits and Challenges of Microirrigation 154 Sustainability Metrics - Concept, Evaluation and Advances 156 Managing Manure and Agricultural Byproducts for Sustainability - Part 1 157 Nutrient Removal, Recovery and Recycle - Part 1 158 Low Impact Development and Ecohydrology 5:00PM-7:00PM 159 NRES Poster Session	160/161 Agri-Industrial Facility Design and Operation / Design, Analysis, Testing and Assembly of Structures 162 Animal Response to Environment 163 Measurement and Mitigation of Air Pollutants from Livestock and Poultry Housing	164 Drying, Handling and Storage - Part 2 165 Food Process and Engineering - Part 2 166 Microwave and Radio Frequency for Processing 167 Modeling Crop and Feed Drying, Handling and Storage 168 Physical Properties Related to Drying and Storage	2:30 PM to 5:00 PM	
	9:30 AM to 12 NOON	201 Emerging Trends in Biological Engineering - Part 3 202 Best Practices in Undergraduate Programmin	203 Advances in Lignin Valorization for Fuels, Chemicals and Bioproducts 204 Biomass Feedstock Supply Logistics and Modeling 205 Renewable Energy Resources and Technologies - Part 1 206 Strategies for Safety Communication and Education	207 Big Data and Data Analysis for Agricultural Applications - Part 2 208 Advanced Computational Approaches for Solving Agricultural and Biological Engineering Problems - Part 1 209 Biosensors & Bioelectronics - Part 2 210 Machine Vision for Precision Agriculture - Part 1 211 Spectroscopic Sensing and Imaging - Part 3 212 UAV for Sensing, Imaging, and Crop Material Application - Part 1	7:30AM-9:00AM 213 Local Production Agriculture 101  214 Advances in Cotton Engineering - Part 2 215 Data Management for Precision Agriculture 216 Machinery Data & Task Optimization - Part 2 217 Engineering Technologies for Fruit, Vegetables, and Other Specialty Crops - Part 1 218 Handling, Storage, Transport and Processing of Forages	219 Advancements in CN and Runoff Hydrology - Part 2 220 Applications Towards the Sustainable Development Goals 221 Hydrologic and Climate Data: Challenges and Opportunities 222 BMPs and Water Quality: Conservation Systems - Part 1 223 Waterborne Pathogens and Emerging Contaminants 224 Advances in Drainage Design, Monitoring and Modeling 225 Advances in Irrigation Management - Part 1 226 Applications of Remote Sensing in Irrigation Management 227 Sustainable Water Use in Agriculture: Traditional and Alternate Water Sources 228 Anaerobic Digestion 229 Nutrient Removal, Recovery and Recycle - Part 2 230 Ecological Engineering Applications	231 Precision Animal Management: Poultry 232 Innovative Resource Systems and Energy Strategies in Controlled Environments	233 Innovative Research and Challenges in Food Engineering - PANEL	9:30 AM to 12 NOON	
	2:30 PM to 5:00 PM	234 Educational Approaches for Transdisciplinary Instruction in Food and Agricultural Systems 235 Woody Biomass Processing and Conversion 236 EOPD POSTER Session	237 Energy Systems POSTER Session 238 Transformational Solutions to Sustainable Agricultural Development in Africa - PANEL  5:00pm-7:00PM 239 Technical Trends and Career Opportunities in the U.S. and Korea - INVITED	240 3D Machine Vision for Sensing and Automation 241 Advanced Computational Approaches for Solving Agricultural and Biological Engineering Problems - Part 2 242 Cloud Computing and Internet of Things in Agriculture 243 Machine Vision for Precision Agriculture - Part 2 244 Sensing for High-Throughput Phenotyping 245 UAV for Sensing, Imaging, and Crop Material Application - Part 2  5:00PM-7:00PM 246 ITSC Poster Session	247 Innovations in Precision Agriculture 248 Crop and Soil Sensing - Part 2 249 Engineering Technologies for Fruit, Vegetables, and Other Specialty Crops - Part 2 250 Pesticide Formulation Application Technology, Environmental Effects - Part 2 251 Advances in Soil-Plant-Machine Dynamics and Systems Simulation 252 Autonomous Vehicles and Systems - Part 2	253 Complexity and Dynamics in Coupled Natural and Human Systems 254 Leveraging Big Data and Computational Tools for Tackling Environmental Problems 255 Innovative Hydrology and Water Quality Monitoring and Analysis 256 BMPs and Water Quality: Conservation Systems - Part 2 257 Edge-of-Field Best Management Practices for Agricultural Drainage Systems - Part 1 258 Advances in Irrigation Management - Part 2 259 Vulnerability Assessment of Land Resources for Sustainable Development-INVITED 260 Manure Nutrients, the Environment, and the Great Lakes-INVITED 261 Ecological Engineering Education: Problems and Projects (Mini Presentations) 262 Lakes, Wetlands and Coastal Systems 264 Water Quality: Hot Moments and Hot Spots 265 Flood vs Drought: Water Availability and Watershed Management - HYBRID 266 Reusing Rain & Wastewater On-site in Non-Irrigation Agriculture Setting: Opportunities & Challenges	267 PAFS Distinguished Lecture Series	268 Processing Systems POSTER Session	2:30 PM to 5:00 PM	
<b>WEDNESDAY, AUGUST 1</b>	7:30 AM to 10:00 AM	7:30AM-11:30AM 301 Challenges and Solutions in Biomass Pellet Storage Systems - WORKSHOP  9:00AM-10:00AM 302 ABET Information Session for Potential Program Evaluators 10:00AM-11:00AM 303 Benefits of ABET Assessment/Painless ABET Assessment	304 Energy Utilization and Application in Agricultural Facilities, Processes and Operations 305 Renewable Energy Resources and Technologies - Part 2 306 Advances in Biomass Preprocessing and Pretreatment - Part 2	307 Advances in Instrumentation and Controls 308 Biosensors for Agro-Defense: Ensuring Agri-Food Safety 309 Discrete Element Modeling (DEM) Applications in Agriculture 310 Hyperspectral Imaging Applications - Part 1 311 Imaging Technologies for High Throughput Phenotyping - Part 3	312 Precision Agriculture POSTER Session 313 Machinery Systems POSTER Session 314 Advances in Tillage, Seeding and Transplanting Technology - Part 1 315 Bionics Engineering for Agricultural Automated Systems 316 Machinery Systems for Crop Production - Part 1 317 UAS in Precision Agriculture	318 Nutrient Transport and Cycling - Part 1 319 Center Pivot Technology Transfer Effort Sponsored by USDA-ARS Ogallala Aquifer Program - Part 1 320 Stream Processes and Restoration 321 Management of Water and Land Resources under Extreme Events - Part 1 322 Managing Manure and Agricultural Byproducts for Sustainability - Part 2 323 Aquaculture and Engineered Aquatic Environments 324 Measurement and Modeling of Ecosystem Services 325 Advances in Ecosystem Evapotranspiration Research	326 Air Emissions from Livestock and Poultry Production	327 Advanced Treatment Technology on Food & Organic Wastes/Byproducts Management - Part 2 328 Food Process and Engineering - Part 3 329 Large Scale Grain Drying, Storage and Aeration Systems - INVITED	7:30 AM to 10:00 AM	
	10:15 AM to 12:15 PM	330 Addressing Ethical Issues in Engineering Design - INVITED 337 Best Practices in Graduate Programming and Recruiting - a RAP SESSION	331 Techno-Economic and Life Cycle Assessment of Bioenergy of Agricultural Systems 332 Advanced and Drop-in Biofuels Production - Biochemical Approach	334 Apps in Agricultural Applications 335 Dielectric Properties and Sensing Applications 336 Hyperspectral Imaging Applications - Part 2 338 Machine Vision and Sensors for Autonomous Vehicles and Robotics	339 Advances in Tillage, Seeding and Transplanting Technology - Part 2 340 Automated Agricultural Field Machinery Data Collection, Analysis, and Utilization 341 Machinery Systems for Crop Production - Part 2 342 Precision Spray Applications with UAVs and Drones	343 Water Security Assessment in River Basin 344 Management of Water and Land Resources under Extreme Events - Part 2 345 Computational Ecohydrology 346 Quantification and Mitigation of Soil and Nutrient Losses in Sustainable Systems 347 Nutrient Transport and Cycling - Part 2 348 Edge-of-Field Best Management Practices for Agricultural Drainage Systems - Part 2 349 Manure Treatment Systems 350 Mitigating Western Lake Erie Harmful Algal Blooms 351 Center Pivot Technology Transfer Effort Sponsored by USDA-ARS Ogallala Aquifer Program - Part 2 356 Transforming Drainage Retaining Water for Increased Resiliency of Drainage Agr Land - INVITED	352 Plant, Animal & Facility Systems POSTER Session	353 Drying, Handling and Storage - Part 3 354 Food Process and Engineering - Part 4 355 Food Safety Engineering - Part 2	10:15 AM to 12:15 PM	