**20th Annual CEAC Greenhouse Crop Production & Engineering Design Short Course**

**Wednesday - March 3rd, 2021**

10:00am-10:10am - Welcome and Introductions

10:10am-10:50am - Controlled Environment Greenhouse and Hydroponics - Limitless Opportunity

Dr. Merle Jensen, Professor Emeritus, School of Plant Sciences, The University of Arizona, Founder of the UA-CEAC in 2000

10:50am-11:00am - Questions

11:00am-11:40pm - Hydroponics, Medium Composition & Delivery Systems

Myles Lewis, MS, Owner, Arizona Vegetable Company & Instructor, CEAC Leafy Greens Intensive Workshop

11:40pm-11:50pm - Questions

11:50pm-12:00pm - 10min Break

12:00pm-12:40pm - Managing Plant Nutrition for Quality Crop Production

Dr. Stacy Tollefson – Professor of Practice, Biosystems Engineering, The University of Arizona

Instructor, CEAC Tomato Intensive Workshop

12:40pm-12:50pm - Questions

12:50pm-1:30pm - Greenhouse Structures - Glazing and Environmental Control

Dr. Gene Giacomelli – Professor, Biosystems Engineering, The University of Arizona

1:30pm-1:40pm - Questions

1:40pm-1:50pm - 10 min Break

1:50pm-2:30pm - Monitoring Your Greenhouse Environment: Simple Tools to Technology Trends

Dr. Murat Kacira – Professor, Biosystems Engineering, The University of Arizona

Director, University of Arizona’s Controlled Environment Agriculture Center

2:30pm-2:40pm - Questions

2:40pm-3:05pm - Virtual Tour of CEAC Facilities and Research Highlights

3:05pm-3:35pm - Breakout Rooms/ Networking
Wednesday- March 10th, 2021:

10:00am-10:40am - **Pest Identification and Control Strategies**  
Dr. Stacy Tollefson – Professor of Practice, Biosystems Engineering, The University of Arizona  
Instructor, CEAC Tomato Intensive Workshop

10:40am-10:50am - Questions

10:50am-11:30am - **Fundamentals on Supplemental and Sole Source Lighting for CEA**  
Dr. Erik Runkle, Professor, Department of Horticulture, Michigan State University

11:30am-11:40am - Questions

11:40am-11:50am - 10 min Break

11:50pm-12:10pm - **CEAC Mission Award**  
Sponsor/ Exhibitor Presentations

12:10pm-12:50pm - **Fertigation Systems in CEA**  
Dr. Neil Mattson, Professor, School of Integrative Plant Science Horticulture Section, Cornell University

12:50pm-1:00pm - Questions

1:00pm- 1:30pm - **Panel 1**

1:30pm-1:40pm - 10 min Break

1:40pm-2:10pm - **Breakout Rooms/ Networking**

2:10pm-2:50pm - **Elements for a Successful Urban Ag Start-Up**  
Jenn Frymark, Chief Greenhouse Officer, Gotham Greens

2:50pm-3:00pm - Questions
Wednesday - March 17th, 2021:

10:00am-10:40am - Fundamentals of Hemp- Opportunities and Challenges in the Industry
   Dr. Hope Jones, Founder & CEO, Emergent Cannabis Sciences

10:40am-10:50am - Questions

10:50am-11:20am - Panel 2

11:20am-11:35pm - Sponsor/ Exhibitor Presentations

11:45am-11:55am - 10 min Break

11:55pm-12:35pm - Plant Based Environmental Control
   Dr. Leo Marcelis, Professor of Horticulture and Product Physiology, Wageningen University

12:35pm-12:45pm - Questions

12:45pm-1:15pm - Breakout Rooms/ Networking (30 min)

1:15pm-1:25pm - 10 min Break

1:25pm-2:05pm - Organic Hydroponic Food Production
   Speaker TBD

2:05pm-2:15pm - Questions

2:15pm-2:55pm - Mushrooms in CEA
   Dr. Barry Pryor, Professor, School of Plant Sciences, The University of Arizona

2:55pm-3:05pm - Questions