GREENHOUSE CROP PRODUCTION & ENGINEERING DESIGN SHORT COURSE

MARCH 11, MORNING
10:00 am & Exhibitor Gallery Opens for Attendees

FUNDAMENTALS OF HYDROPONICS & CONTROLLED ENVIRONMENT AGRICULTURE (CEA)
8:30 – 9:15 am & Greenhouse Design - Structures, Glazing & Cooling
Dr. Gene Giacomelli - Professor, Biosystems Engineering, The University of Arizona

9:15 – 10:00 am & Hydroponics, Medium Composition & Delivery Systems
Myles Lewis – Owner, Arizona Vegetable Company & Instructor, CEAC Intensive Workshop

10:00 – 10:45 am & Managing plant Nutrition for Crop Production Optimization
Dr. Stacy Tollefson – Professor of Practice, Biosystems Engineering, The University of Arizona

10:45 – 11:45 pm & Lunch Provided & Networking Opportunity in Exhibit

MARCH 11, AFTERNOON
ESSENTIALS OF CROP PRODUCTION IN COMMERCIAL SETTINGS
11:45 – 11:50 pm & Welcome and Introductions

11:40 – 12:05 pm & 5 Minute Presentations from this year’s Sponsors

12:05 – 1:00 pm & TBA
TBA

1:00 – 1:45 pm & Integrated Pest Management (IPM) - Common Insects & Mites
Dr. Stacy Tollefson – Professor of Practice, Biosystems Engineering, The University of Arizona

1:45 – 2:30 pm & What Happened to my Plant?
Karen Tifft - Consultant, Greenhouse Vegetable Consultants, LLC.

2:45 – 3:15 pm & Discussion of Previous Lectures, Q&A

3:15 – 3:30 pm & 3, 5 Minute Exhibitor Presentations

3:30 – 4:00 pm & Coffee Break, Visit Exhibit

4:00 – 4:45 pm & Biotech: Tissue Culture Procedures & its Value added to the CEA Market
Dr. Hope Jones - Founder & CEO, Emergent Cannabis Sciences

4:45 – 5:30 pm & Developments in Seed Varieties
TBA

5:30 – 5:50 pm & Discussion of Previous Lectures

6:00 – 7:30 pm & Welcome Reception – Fueled by appetizers & cash bar

6:30 pm & CEAC Mission Award
MARCH 12, MORNING

7am Breakfast provided

ENGINEERING CONSIDERATIONS & OPTIMAL SYSTEMS DESIGN AND MANAGEMENT

7:55 – 8:00 am Welcome & Announcements

8:00 – 8:45 am Monitoring Your Greenhouse Environment: Simple Tools to Technology Trends Dr. Dr. Murat Kacira – Professor, Biosystems Engineering, The University of Arizona

8:45 – 9:30 am Control Systems Design for Decision Support Management Dr. David Story – Management Systems Consultant, Ridder HortiMax – North America

9:30 – 9:50 am Discussion of Previous Lectures – Q&A

9:50 – 10:05 am 3, 5-minute Exhibitor presentations

10:05 – 10:30 am Coffee Break, Visit Exhibit

10:30 – 11:15 am TBA

11:15 – 12:00 pm Engineering Your Greenhouse Structure for Energy Optimization Dr. Gene Giacomelli – Professor, Biosystems Engineering, The University of Arizona

12:00 – 12:20 pm Discussion of Previous Lectures – Q&A

12:20 – 1:20 pm Lunch Provided

MARCH 12, AFTERNOON

VALUE-ADDED CROPS

1:20 – 2:05 pm Co-Producing Mushrooms in CEA for Boosted CO₂ Dr. Barry Pryor - Professor, School of Plant Sciences, The University of Arizona

2:05 – 2:50 pm The Future and Automation of Specialty Mushroom Production Chris Bailey - Vice President, Gourmet Mushrooms, Inc., Sebastopol, CA, USA

2:50 – 3:10 pm Discussion of Previous Lectures – Q&A

3:10 – 3:25 pm 3, 5-minute Exhibitor presentations

3:25 – 3:45 Coffee Break, Visit Exhibit

3:45 – 4:30 pm Critical Factors in Production of Greenhouse Veggies Dr. Merle Jensen - Professor Emeritus, School of Plant Sciences, The University of Arizona

4:30 – 5:15 pm Packing & Marketing your Products for Success Dr. Merle Jensen - Professor Emeritus, School of Plant Sciences, The University of Arizona

5:15 – 5:35 pm Discussion of Previous Lectures – Q&A

Dinner – On Your Own
March 13, Morning

7am  Breakfast provided

**Modern CEA Technology**

7:55 – 8:00 am  Welcome & Announcements

8:00 – 8:45 am  **Sunlight and Supplemental Lighting Applications for CEA**
Dr. Neil Mattson - Associate Professor, School of Integrative Plant Science, Cornell University

8:45 – 9:30 am  TBA

9:30 – 9:50 am  Discussion of Previous Lectures - Q&A

9:50 – 10:05 am  3, 5-minute Exhibitor presentations

10:05 – 10:30 am  Break, Visit your Exhibitors

10:30 – 11:15 am  **Water Quality & Considerations for Recycling Nutrient Solutions**
Dr. Neil Mattson - Associate Professor, School of Integrative Plant Science, Cornell University

11:15 – 12:00 am  **Sole Source Electric Lighting for Controlled Environment Crop Production**
Dr. Fei Jia - Technical Solutions Manager, Heliospectra

12:00 – 12:20 pm  Discussion of Previous Lectures,

12:20 – 1:15 pm  Q&A Lunch Provided

March 13, Afternoon

**The Evolving CEA Market**

1:15 – 2:00 pm  **Food Safety Principles & Government Regulations**
Dr. Margarethe Cooper - Assistant Professor of Practice, Victor P. Smith Endowed Chair in Food Safety, UA

2:00 – 2:10 pm  Discussion of Previous Lecture – Q&A

2:10 – 2:55 pm  **Working with Wholesale Distribution**
Kristen Osgood - Regenerative Strategy Manager, Stern Produce

2:55 – 3:05 pm  Discussion of Previous Lecture – Q&A

3:05 – 3:20 pm  3, 5 Minute Exhibitor presentation

3:20 – 3:45 pm  Coffee Break, Visit Exhibit

3:45 – 4:15 pm  **Locally Grown Market Opportunities**
Chaz Shelton - Co-Founder, Merchant’s Garden

4:15 – 5:30 pm  **Elements for a Successful Urban Ag Start-up**
Jenn Frymark – Chief Greenhouse Officer, Gotham Greens

5:30 – 5:50 pm  Discussion of Previous Lecture – Q&A

Dinner – On Your Own

4:30 pm - Exhibit break-down begins
**MARCH 14, ALL DAY!**

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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>7am</td>
<td>Breakfast provided</td>
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**Hands on workshops at CEAC:**

<table>
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<th>Time</th>
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<tr>
<td>8:00</td>
<td>Depart hotel for CEAC [Bus provided or Drive self] [1951 E. Roger Road Tucson, AZ 85719]</td>
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<tr>
<td>8:30 – 10:00 am</td>
<td>ROUND 1</td>
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<tr>
<td>10:00 – 11:30 am</td>
<td>ROUND 2</td>
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<tr>
<td>11:30 – 1:00 pm</td>
<td>Lunch in the CEAC Classroom &amp; Yard</td>
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<tr>
<td>1:00 – 2:30 pm</td>
<td>ROUND 3</td>
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<tr>
<td>2:30 – 4:00 pm</td>
<td>ROUND 4</td>
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<tr>
<td>4:00 – 5:00 pm</td>
<td>Return to Hotel</td>
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Please see the back of this workbook for workshop offerings. Mark down your selections if you haven’t yet!

**MARCH 15**

**COMMERCIAL GH TOUR**

<table>
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<th>Time</th>
<th>Activity</th>
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<tr>
<td>8am – 2pm</td>
<td>TBA</td>
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TBA