2016 Greenhouse Crop Production & Engineering Design Short Course
March 20 - 25, 2016

Located at the Westward Look Wyndham Grand Resort and Spa
245 East Ina Road, Tucson, Arizona 85704

http://ceac.arizona.edu/greenhouse-crop-production-engineering-design-short-course

Sponsored By:

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Sunday, March 20, 2016, Afternoon

Arrival, Set-Up, Registration, Welcome Reception and ‘Get Acquainted’ Day

2:00 – 5:30 pm  Exhibitor Set-Up
3:30 – 6:00 pm  Registration Table Open
3:30 pm         Exhibitor Gallery Open until 7:30 pm
5:30 pm         Cash Bar Opens
5:30 – 7:30 pm  Welcome Reception
7:30 pm         Invited Speakers Meeting
Monday, March 21, 2016, Morning

“Plant Production I within Hydroponics & Controlled Environments”

Moderator: Merle Jensen

7:00 – 8:00 am  Breakfast
8:00 – 8:15 am  Welcome and Introductions: Gene Giacomelli
8:15 – 9:00 am  Growing Systems and the Crops they Support

     Dr. Merle Jensen, Greenhouse Vegetable Consultants

9:00 – 9:45 am  Tomato Varieties for Greenhouse

     Dr. Pat Rorabaugh, University of Arizona

9:45 – 10:30 am  Leafy Crop Varieties for Greenhouse

     Dr. Mike Evans, University of Arkansas

10:30 – 10:45 am  Break - Visit your Exhibitors
10:45 – 11:15 am  Discussion of Previous Lectures - Question & Answers
11:15 – 11:45 am  6, 5–minute Exhibitor presentations
11:45 – 12:00 am  Announcements
12:00 – 1:00 pm  Lunch

Monday, March 21, 2016, Afternoon

“Plant Production II within Hydroponics & Controlled Environments”

Moderator: Pat Rorabaugh

1:00 – 1:45 pm  Greenhouse Pest Problems: Common insects, mites & diseases

     Dr. Stacy Tollefson

1:45 – 2:30 pm  Integrated Pest Management

     Karin Tifft, Greenhouse Vegetable Consultants, LLC

2:30 – 2:45 pm  Disinfectants

     Karin Tifft, Greenhouse Vegetable Consultants, LLC

2:45 – 3:15 pm  Discussion of Previous Lectures - Question & Answers
3:15 – 3:30 pm  Break, Visit your Exhibitors
3:30 – 3:45 pm  3, 5-minute Exhibitor presentations
3:45 – 4:30 pm  Plant Nutrition Basics

     Dr. Pat Rorabaugh

4:30 – 5:15 pm  Working with Substrates – chemical and physical properties

     Dr. Mike Evans, The University of Arkansas

5:15 – 5:45 pm  Discussion of Previous Lectures - Question & Answers

Dinner – on your own
**Course Schedule is Subject to Change**

### Tuesday, March 22, 2016, Morning

**Moderator: Murat Kacira**

#### “Lighting for Growing Crops in Controlled Environments”

- **7:00 – 8:00 am**  
  Breakfast
- **7:55 – 8:00 am**  
  Welcome & Announcements
- **8:00 – 8:45 am**  
  Greenhouse Structures & Glazing  
  *Dr. Murat Kacira, University of Arizona*
- **8:45 – 9:30 am**  
  Plant Lighting Basics and Applications  
  *Dr. Ricardo Hernandez, North Carolina State University*
- **9:30 – 9:45 am**  
  Discussion of Previous Lectures - Question & Answers
- **9:45 – 10:00 am**  
  3, 5-minute Exhibitor presentations
- **10:00 – 10:15 am**  
  Break, Visit your Exhibitors
- **10:15 – 11:00 am**  
  LED Lighting for Controlled Environment Agriculture  
  *Dr. Rebecca Knight, Illumitex, Inc.*
- **11:00 – 11:45 am**  
  Business Lighting Talk  
  *Chris Higgins, Hort Americas*
- **11:45 – 12:00 pm**  
  Discussion - Question & Answers
- **12:00 – 1:00 pm**  
  Lunch

### Tuesday, March 22, 2016, Afternoon

**Moderator: Kevin Fitzsimmons**

#### “Alternative Systems and Crops for Controlled Environments”

- **1:00 – 1:45 pm**  
  Intro to Aquaponics  
  *Dr. Kevin Fitzsimmons, University of Arizona*
- **1:45 – 2:30 pm**  
  An Engineers View of Recirculating Aquaculture and Aquaponic Systems  
  *Dr. James Ebeling*
- **2:30 – 3:00 pm**  
  Discussion of Previous Lectures - Question & Answers
- **3:00 – 3:15 pm**  
  Coffee Break
- **3:15 – 4:00 pm**  
  Greenhouse Strawberry Production  
  *Mark Kroggel, University of Arizona*
- **4:00 – 4:45 pm**  
  Growing Crops in High Tunnels  
  *Ursula Schuch, University of Arizona*
- **4:45 – 5:15 pm**  
  Discussion of Previous Lectures - Question & Answers

Dinner – On Your Own
**Course Schedule is Subject to Change**

### Wednesday, March 23, 2016, Morning

**“Indoor Growing Session”**

- 7:00 – 8:00 am  Breakfast
- 7:55 – 8:00 am  Welcome & Announcements
- 8:00 – 8:45 am  Introduction to Growing Plants Indoors  
  **Dr. Ricardo Hernandez, North Carolina State University**
- 8:45 – 9:30 am  Getting Started on Urban Farming  
  **Paul Hardej, Illumitex, Inc.**
- 9:30 – 10:00 am  Discussion of Previous Lectures - Question & Answers
- 10:00 – 10:15 am  Break  
  Visit your Exhibitors
- 10:15 – 11:00 am  Ecological Controlled Environment Farming  
  **Jamie Byron, Grove Labs**
- 11:00 – 11:45 am  Building an Ag Startup Company  
  **Gabe Blanchet, Grove Labs**
- 11:45 – 12:00 pm  Discussion of Previous Lectures - Question & Answers
- 12:00 – 1:00 pm  Lunch

### Wednesday, March 23, 2016, Afternoon

**“Experiences in Production, Marketing and Business Establishment”**

- 1:00 – 1:45 pm  Greenhouse Food Safety  
  **Kurt Nolte, University of Arizona**
- 1:45 – 2:30 pm  Organic Seedling Production  
  **Jose Chen Lopez, Premier Tech Horticulture**
- 2:30 – 3:00 pm  Discussion of Previous Lectures - Question & Answers
- 3:00 – 3:15 pm  Break, Visit your Exhibitors
- 3:15 – 4:00 pm  Succeeding as a Small Greenhouse Grower  
  **Todd & Tricia McPhail, Lynden, WA, McPhails Greenhouses**
- 4:00 – 4:45 pm  Hi Tech- Hi Touch: From Farm Markets to Supermarkets  
  **Merle Jensen, Greenhouse Vegetable Consultants, LLC**
- 4:45 – 5:15 pm  Discussion of Previous Lectures - Question & Answers

Dinner – On Your Own
**Course Schedule is Subject to Change**

Thursday, March 24, 2016

**Hands-on Workshops at CEAC**

7:00 – 8:00 am  Breakfast
8:00 am  Bus Leaves to CEAC for Workshops (Same Workshops Repeated 3 Times)
8:30 – 10:15 am  **ROUND ONE WORKSHOPS** [select one to attend in each of 3 rounds]
- Basics of Fertigation: **Steve Poe, Neal Barto**
- Tomato Crop Maintenance Using High Wire Systems: **Pat Rorabaugh**
- Growing Lettuce and Herbs in Floating System: **Will Kacheris**
- Sensors and Controls Basics: **Murat Kacira**
- Strawberry Greenhouse: **Mark Kroggel**

10:15 – 12:00 pm  **ROUND TWO WORKSHOPS** [select one workshop from list above]
12:00 – 1:00 pm  Lunch at CEAC
1:00 – 2:45 pm  **ROUND THREE WORKSHOPS** [select one workshop from list above]
2:45 – 3:45 pm  **Extra Round – [select any/all]**
- Veggie Box: **Kroggel, Students**
- Informal Meetings/Discussions for previous Workshops [attend any/all]
  - Tomato Crop Production: **Pat Rorabaugh**
  - Lettuce/Herb Production: **Will Kacheris**
3:45 pm  Visit to Aquaponics Greenhouse
  - Dr. Kevin Fitzsimmons
5:30 pm  Return to Westward Look

Dinner – On Own

Friday, March 27, 2015

7:15 – 8:15 am  Breakfast

**OPTIONAL COMMERCIAL GREENHOUSE TOUR (Fee Required)**

**Wholesum Family Farms**
2811 N. Palenque Avenue Suite 3
Nogales, AZ 85621
http://www.wholesumharvest.com/

8:30 am  Leave Hotel for Commercial Greenhouse Tour
Lunch  Box lunch provided on return route
2:00 pm  Estimated return to Hotel

**End of Official Short Course Schedule**