



## Registration Information

### Contact Mariana Lara

By phone: 847-329-9999  
By fax: 847-329-8888  
By email: [germann@germann.org](mailto:germann@germann.org)  
By mail: Germann Instruments, Inc.  
8845 Forest View Road  
Evanston, IL. 60203

Download registration form and workshop schedule from our Webpage:  
<http://www.germann.org>

**Registration must be received at least 30 days before the workshop.**

### Fees:

\$1200 per person  
\$1000 per person if two or more are from same organization  
\$800 per student (ID required)

### Conditions and Terms of Payment:

Payment must be received at least 14 days before the start of the workshop. If a registrant cancels or cannot attend the workshop after payment, no refund will be made. Those funds will be credited towards the next workshop. Should the workshop be cancelled by Germann Instruments after payment is made, received funds will be returned or credited towards the next workshop.



Test Smart — Build right

## Educational Workshop

# CONCRETE SCIENCE & ADVANCED METHODS FOR EVALUATION OF CONCRETE

October 9 -11, 2019

Germann Instruments

8845 Forest View Road  
Evanston, Illinois

Instructors:

Dr. Nicholas J. Carino

Mr. Claus Germann Petersen

*Limited to 15 attendees per workshop*

**18 PDHs Approved by PIE**

Course No: 20170281



### Accommodations:

Nearby hotels include the following:

#### Hilton Garden Inn Chicago North

1818 Maple Avenue  
Evanston, IL. 60201  
Tel: 847-475-6400  
Email: [barney.peterson@hilton.com](mailto:barney.peterson@hilton.com)

#### Margarita European Inn Hotel

1566 Oak Avenue  
Evanston, IL. 60201  
Tel: 847-869-2273  
Email: [info@margaritainn.com](mailto:info@margaritainn.com)

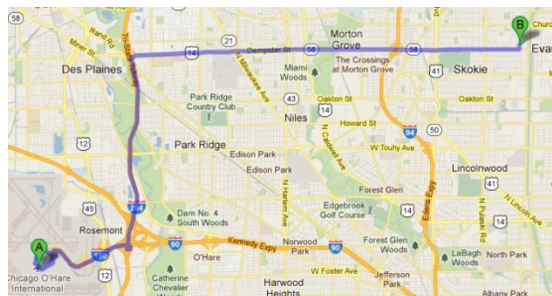
#### Hampton Inn Suites

5201 Old Orchard Road – Skokie, IL 60077  
Ph: 847-583-1111 - Fax: 847-779-4740

Mention "Germann Instruments" for corporate rate discount.

### Workshop Location:

The Germann Instruments facility (B) is located north of Dempster St. about 16 miles from O'Hare Airport (A)



# CONCRETE SCIENCE & ADVANCED METHODS FOR EVALUATION OF CONCRETE

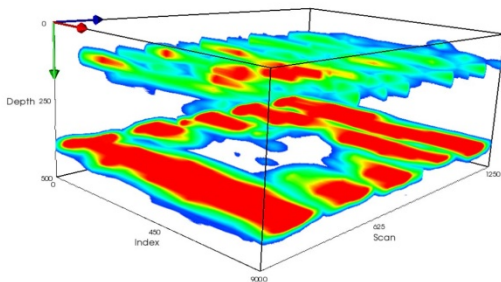
This 3-day workshop is for persons wishing to enhance their understanding of basic concrete science and traditional and advanced methods for evaluation of concrete and concrete structures. The workshop includes lectures and demonstrations covering the full range of systems used worldwide. Similar workshops have received excellent reviews from international audiences. Germann Instruments is pleased to offer the same workshop to the Americas. This workshop has been approved for **18 PDHs** by the Practicing Institute of Engineering.

## Workshop Objectives:

- Review basic concepts of concrete science
- Familiarize engineers with available test methods and test systems for evaluation of reinforced concrete structures.
- Review the principles and capabilities of selected nondestructive and in-place tests for evaluation of reinforced concrete.
- Review other advanced test methods

## Workshop materials:

Participants will receive copies of presentation materials, ACI 228.1R, and ACI 228.2R.



## Workshop Topics:

### Evaluation of in-place concrete strength

- Core testing
- Rebound hammer
- Pullout test (LOK-Test, CAPO-Test)
- Pull-off test (BOND-Test)
- Maturity method (COMA-Meter)

### Flaw detection based on stress waves

- Ultrasonic pulse velocity (PUNDIT, Surfer)
- Impact-echo method (DOCTer)
- Impulse-response method (s'MASH)
- Ultrasonic-echo method (MIRA)

### Location of reinforcement

- Covermeters (CoverMaster)
- Ground penetrating radar (Conquest)

### Evaluation of reinforcement corrosion

- Durability principles
- Water penetration (GWT)
- Chloride content (RCT & RCT/W)
- Carbonation (Deep Purple, Rainbow)
- Chloride profile (Profile Grinder)
- Service life estimation
- Half-cell potential (Mini Great Dane)
- Corrosion rate (GalvaPulse)
- Concrete conductivity (Merlin)
- Rapid chloride penetration (PROOVE'it)

### Advanced test methods

- Air-void characteristics (AVA)
- Heat of hydration (HeatBox)
- Concrete rheology (ICAR Rheometer)
- Autogenous shrinkage (Auto-Shrink)

## Instructors:



**Dr. Nicholas J. Carino** is an internationally recognized expert and educator on NDT and standard test methods. He retired from NIST after 25 y of service and is an independent consultant. He has served in many leadership positions on ACI and ASTM Committees. Dr. Carino received many awards from ACI and ASTM for his contributions in research and standards development. He is an Honorary Member of ACI and a Fellow of ASTM.



**Mr. Claus Germann Petersen** is President of Germann Instruments, one of the world's leading suppliers of advanced concrete test systems. He is the inventor of numerous test systems that are used worldwide. Mr. Petersen is dedicated to spreading knowledge on the capabilities and benefits of advanced test systems. He has been an active member in the NDT Committees of ACI, ASTM, and RILEM, and is the recipient of the Professor Ostenfeld Gold Medal from the Danish Society for Structural Science and Engineering.

