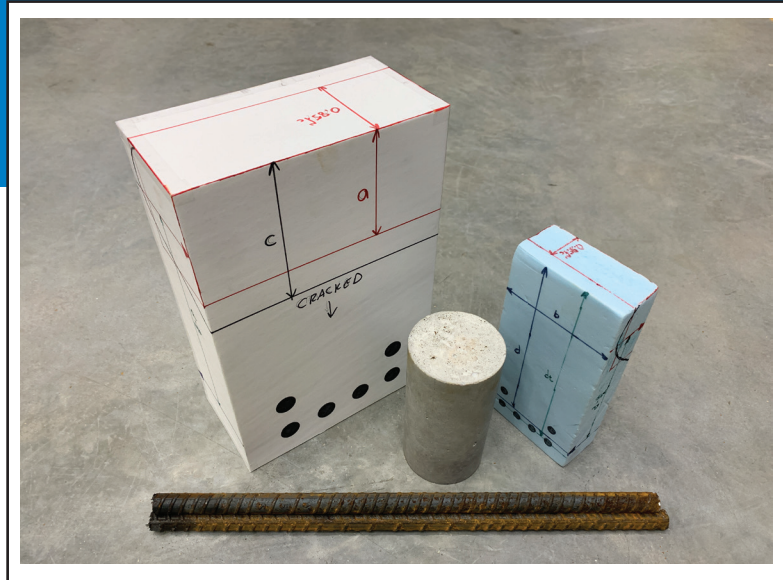


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SYMPOSIUM VOLUME



Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete

SP-359

Editors:
Benjamin Z. Dymond and J. Chris Carroll



American Concrete Institute
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Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete

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Editors:
Benjamin Z. Dymond
and J. Chris Carroll



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Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete

The manuscripts included herein introduce common learning theories and methods in engineering education that can be specifically applied to the topics of reinforced concrete and concrete materials. The papers focus on the application of these theories to specific concrete-related topics and suggest ways to implement these methods in university classrooms. The primary goal of this Special Publication is to provide pedagogical resources, ideas, and techniques that can be implemented by anyone that accepts the challenge of teaching reinforced concrete and concrete materials, from a new instructor to an experienced professor.

To disseminate effective teaching methods among a global group of educators and learners, ACI Committee S802 organized two sessions entitled “Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete” at the Spring 2021 ACI Virtual Convention. The first session was focused on best practices teaching concrete materials and the second session was focused on best practices teaching introductory reinforced concrete. The manuscripts in this Special Publication are organized in the order in which they were presented at the ACI Convention.

The co-editors, Dr. Benjamin Dymond and Dr. J. Chris Carroll, are grateful for the contributions from the Special Publication authors and sincerely value the time and effort of the authors in preparing the papers in this volume. Furthermore, the Special Publication would not have been possible without the effort expended by the experts who peer reviewed the papers in this volume.

Benjamin Dymond and J. Chris Carroll
Co-Editors

TABLE OF CONTENTS

SP-359-1:

Effective Teaching Methods in Concrete Education 1-17

Authors: Matthew K. Swenty, Benjamin Z. Dymond, J. Chris Carroll

SP-359-2:

Approaches to Teaching Cement Hydration Processes to Undergraduate Students 18-38

Authors: Lisa E. Burris, Kenneth C. Hover, Anton K. Schindler, Aleksandra Radlińska

SP-359-3:

Pedagogical Techniques used to Teach Fresh and Hardened Concrete Properties 39-53

Authors: Kacie C. D'Alessandro, Andrei Ramniceanu, Jacob D. Henschen, Matt O'Reilly

SP-359-4:

Teaching Additive Manufacturing with Consideration for Cementitious Materials 54-68

Authors: Jacob D. Henschen, Daniel Blood, Shiho Kawashima, Heather A. Kirkvold

SP-359-5:

Effective Teaching Methods for Non-destructive Testing Techniques 69-89

Authors: Armen Amirkhonian and Eleanor Skelton

SP-359-6:

Pedagogical Techniques used to Teach Detailing of Reinforced Concrete Structures 90-108

Authors: Kacie C. D'Alessandro, Matthew K. Swenty, Eric S. Musselman

SP-359-7:

Teaching the Equivalent Rectangular Stress Block 109-126

Authors: J.Chris Carroll, Benjamin Z. Dymond, Anahid A. Behrouzi

SP-359-8:

Teaching Flexural Strength Failure Modes in Reinforced Concrete I 127-144

Authors: Royce W. Floyd, Karl F. Meyer, Brandon E. Ross

SP-359-9:

Active and Visual Methods for Teaching Nonrectangular Reinforced Concrete Beams 145-161

Authors: J.Chris Carroll, Anahid A. Behrouzi, Karl F. Meyer

SP-359-10:

Approaches for Teaching Shear Analysis and Design of Reinforced Concrete 162-181

Authors: Matthew D. Lovell, Royce W. Floyd, Benjamin Z. Dymond, Kenneth C. Hover

Effective Teaching Methods in Concrete Education

Matthew K. Swenty, Benjamin Z. Dymond, J. Chris Carroll

Synopsis: Teaching engineering students reinforced concrete and concrete materials topics is not a trivial task. Students learn in a variety of different ways and many professors rely on only a few methods of presenting the material and directing learning. The disconnect can create a struggle in the learning process for all parties involved. This paper introduces several different common teaching styles and methods that have been used in engineering education. The methods are compared and contrasted based on complexity, resources required, and preparation time. Various levels of change are discussed from small incremental adjustments to completely redesigning the course. A series of examples are described to demonstrate a few ways of implementing new teaching ideas into a classroom. Companion papers expand upon this introductory paper and provide in-depth and specific applications to topics common in concrete education. The goal of this special publication is to provide a venue to share teaching ideas and make concrete education more effective, efficient, and enjoyable for everyone.

Keywords: Engineering education, civil engineering, learning styles, teaching methods, active learning, reinforced concrete, concrete materials, teaching examples