

Architecture Registration Examination (ARE 4.0) Structural Systems Seminar

Thank you very much for signing up for my ARE Structural Systems Seminar. My name is David Thaddeus and I have been teaching structures courses at UNC-Charlotte since 1999. Before moving to Charlotte, I was an Associate Professor at the College of Architecture at the University of Houston, where I taught structures since 1985. I have been offering seminars for the structural divisions of the ARE since 1990. I hold a Bachelors degree in structural engineering from the American University of Beirut in Lebanon and a Masters in Architecture from the University of Houston.

The schedule for the seminar is attached to this correspondence. The topics discussed cover the contents of the Structural Systems Division of the ARE 4.0 including the structural framing vignette. The seminar will meet all day Friday, Saturday and Sunday (Please see attached schedule). The seminar starts with very basic concepts and then gradually progresses into more complicated topics. Students are asked to bring basic writing materials, notebook (grid paper preferred) and a calculator.

Please consider printing the following documents before the seminar (start reading them if you can). If you are unable to print them before the seminar, then you may want to review them after the seminar. **Printing the following documents is optional and will not be used during the seminar. There will be hard-copy handouts that will be distributed during the seminar.**

The following documents may be accessed by clicking on <http://arestructures.com/face-to-face> and entering in the lower part of the screen the password areSSpass.

- **Workbook KEY** : This is a color copy of the Workbook KEY document that we will fill out together during the seminar. I usually forward this document after the seminar, but based on several recent requests, I have chosen to forward it before the seminar. During the seminar you will get a blank B&W copy of this document that we will fill out together in color. Please print the following document on 11x17 in color if you prefer not to take notes during the seminar, but rather follow along and add some occasional notes in class. A hard copy of this document will NOT be provided by AIA.
- **Historical Synopsis**: Please go to and download this document. It is a synopsis of structurally / historically significant buildings. (We will not review this one, it is there only for your reference). A hard copy of this document will NOT be provided by AIA.
- If you take notes on an iPad or similar you may want to download the following documents to your device before the seminar (without printing a hard copy). Hard copies of these documents will be circulated at the beginning of the seminar. No need to print these two documents, hard copies will be passed out at the seminar.

Reference & Workbook Hard copies of these two documents and others will be provided by AIA

- Please download & / or print the following document from the Federal Emergency Management Agency. FEMA 454. Chapters 4, 5, 8 & 9 (click on link below). You **MUST** read these chapters before taking the ARE 4.0 Structural Systems Division.

http://www.fema.gov/media-library-data/20130726-1556-20490-5679/fema454_complete.pdf

- Please download & / or print and read the following documents from the AIA. The book series is titled "Buildings at Risk" , one is Seismic Design Basics for Architects. It was written by Christopher Arnold, FAIA and has been out of print since 1994. It is an easy read of 109 pages. You **MUST** read this book before taking the ARE 4.0 Structural Systems Division. The second link is to the Wind Design Basics for Architects.

<http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiap016810.pdf>

<http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiap016809.pdf>

- Please consider downloading (and optionally printing) the following document (s) from NCARB. This link leads you to free study guides from NCARB. One is for the Multiple Choice Divisions, the other is for the Graphic Divisions. You do NOT need to bring the entire booklet to the seminar as copies of the structural questions will be provided at the seminar. This is a valuable resource that you must review at some point before you take each division of the ARE.

http://www.ncarb.org/ARE/~media/Files/PDF/ARE-Exam-Guides/SS_Exam_Guide.pdf

- Also while on the NCARB site, please download and practice the Structural Systems Vignette software at <http://www.ncarb.org/ARE/Preparing-for-the-ARE.aspx>

The recommended (not required) ARE 4.0 textbooks for study after the seminar are:

1. Kaplan / Architecture License Seminar (ALS)
Books for every multiple choice division
Q & A Books
Flash cards
2. Ballast's Guide to the A.R.E.
Structural divisions
Other divisions
3. Archiflash system – Multiple-choice divisions
4. Francis Ching books (not specific to the ARE, but contain very useful information)
A Visual Dictionary of Architecture (especially for BDCS & SS review)
Building Construction Illustrated (especially for BDCS & SS review)
Building Structures Illustrated: Patterns, Systems, and Design (with Barry Onouye)
5. arecoach.com Web Site to post your vignette solutions and get feedback.
6. Mario Salvadori Books Why Buildings Stand Up / Why Buildings Fall Down
7. Edward Allen Books (with Joseph Iano)
Fundamental of Building Construction: Materials & Methods
The Architect's Studio Companion

I would recommend that you consider taking the BDCS (Building Design Construction Systems) Division as soon as you finish with the Structural Systems Division (preferably even before SS). The topics on the BDCS Division and the Structural Systems (SS) Division are interrelated. I think that it is imperative to study some topics from BDCS. I strongly believe that there are a lot of structural properties of materials question on this exam, much more so than the structural principles per se. Anyway, I think that the most important topic from BDCS is CONCRETE in all of its form and properties, etc... NCARB does NOT typically ask any math questions on concrete, it really is beyond the scope. So knowing about post-tensioned, pre-stressed, cast in place, pre-cast concrete and their properties is essential. Understanding that standardizing formwork is key to economy, etc... All this is BDCS in my opinion and will be found mostly on SS. Another essential topic is soils and foundation systems. Also please review the properties of steel (wood is less important due to its limited application outside of residential scale projects, but you still must be familiar with basic concepts). Another very important topic is Life-Safety which translates into fire-proofing of steel members. These are some of the topics I consider essential BDCS on SS. As far as roofing membranes, caulking, etc... These topics are purely BDCS and unlikely to be on the SS.

Also, the suggested minimum study time on your own after the seminar (assuming that you have not studied at all before the seminar):

for Structural Systems : 80 Hours and for the Graphics Vignette: 10 Hours

Thank you again for your interest in my ARE Structural Systems Seminar and I look forward to meeting you. I am including the contact information below for your reference if you should have any questions.

Sincerely,



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PLEASE BRING SEVERAL COLORED PENS / PENCILS TO THE SEMINAR.

(Pencils are preferred by many as pens do tend to bleed through the copies. On the other hand, pencils need frequent sharpening. Your call on this one)

I will use at least the following colors:

Red = Compression ; Blue = Tension;

Green = Shear ; Purple = Bending
Brown = Deflection)