JOURNEY TO LICENSURE

INS AND OUTS OF THE PE & SE EXAM

JAKE DUNN, PE & JOSH OGLE, SE
MARCH 1, 2022
SEAU CONFERENCE PRESENTATION
JOURNEY TO LICENSURE

- INTRODUCTION
- PATHS TO LICENSURE
- PE EXAM
  - WHAT TO EXPECT ON THE PE EXAM
  - PE STUDY MATERIALS
- SE EXAM
  - WHAT TO EXPECT ON THE SE EXAM
  - SE STUDY MATERIALS
- EXAM PREP TIPS & TRICKS
- AFTER PASSING THE EXAM
- Q&A
INTRODUCTION

JAKE • JOSH • KAHOOT • PRIZES
JAKE DUNN, PE

- **School** – University of Utah (BS)
  University of Utah (PhD)
- **Work** – Dunn Associates
  PPI (Kaplan)
- **Study Snack** – Starburst Minis
Did ya hear, I finally graduated?

Yeah, and just a shade under a decade too... alright.

Ya know, a lot of people go to college for seven years.

I know... they're called Doctors.
JOSH OGLE, SE

- **School** – Brigham Young University (BS)
  University of California, Davis (MS)
- **Work** – Dunn Associates
  PPI (Kaplan)
- **Study Snack** – Milk Duds + Mt Dew
KAHOOT

- TOP THREE WIN PRIZES!
- PAY CLOSE ATTENTION

- SIGN UP NOW…
  - kahoot.it
  - bit.ly/SEAU2022
  - QR CODE--->

GAME PIN
820 5399
Prizes include:

- 6-month OnDemand Course subscription for one of the following...
  - PE EXAM ($2,595 Value)
  - SE EXAM ($1,795 Value)
  - CALIFORNIA SURVEYING ($895 Value)
  - CALIFORNIA SEISMIC ($895 Value)
PATHS TO LICENSURE

PE · CALIFORNIA PE · SE
PE REQUIREMENTS

- Pass the FE exam
- Graduate from ABET accredited university
- Work Experience after graduation (under licensed engineer)
  - 4 years of engineering experience
  OR
  - 3 years of engineering experience + MS
  OR
  - 2 years of engineering experience + PhD
- To sit for the exam… 0 years minimum
Flowchart taken from:
www.bpelsg.ca.gov/applicants/new_process_flowchart.pdf
CALIFORNIA PE REQUIREMENTS

- EIT Certificate
- Work Experience after graduation (under licensed engineer)
  - 3 years of engineering experience
  - OR
  - 2 years of engineering experience + MS/PhD
- To sit for the exam… **0 years minimum**
- Take it at a local testing center
Flowchart taken from:
www.bpelsg.ca.gov/applicants/new_process_flowchart.pdf
SE REQUIREMENTS

- PE License
- Work Experience (under licensed structural engineer)
  - 3 years of engineering experience
- To sit for the exam... **2 years minimum**
Flowchart taken from:
www.bpelsg.ca.gov/applicants/new_process_flowchart.pdf
KAHOOT

READY?...

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WHAT TO EXPECT ON THE PE EXAM

FORMAT · SITE · ENVIRONMENT · EXAM SPEC · MATERIALS
EXAM FORMAT

- Computer-based exam (CBT)
  - Year-round testing

- 80 total multiple choice questions
  - 40 questions on “breadth”
  - 40 questions on “depth”

- Closed book exam with references provided

Info taken from:
EXAM SITES

- Testing Centers
  - Scattered throughout Wasatch front

- Very similar to FE

Info taken from:
www.ncees.org/exams/test-center-locations/
EXAM ENVIRONMENT

- “Cubicle”-like workspace
- Computer monitor
  - Questions, answers and figures
- Scratch paper and pencil
- Locker provided for personal items
  - Phones, wallet, watch etc.

Info taken from:
www.ncees.org/exams/test-center-locations/
EXAM SPECS

- NCEES outlines what to expect
  - Exam topics
  - Approximate number of questions

- Design standards and codes
  - Provided on exam

Info taken from:
www.ncees.org/engineering/pe/civil-cbt/
NCEES Principles and Practice of Engineering Examination
CIVIL-STRUCTURAL CBT Exam Specifications
Effective Beginning January 1, 2022

- The exam topics have not changed since April 2015 when they were originally published.
- The exam is computer-based. It is closed book with electronic references. The NCEES PE Civil Reference Handbook is included in the exam along with the design standards shown on the last two pages.
- The examples specified in knowledge areas are not exclusive or exhaustive.

1. Project Planning
   A. Quantity take-off methods
   B. Cost estimating
   C. Project schedules
   D. Activity identification and sequencing
   Number of Questions: 4-6

2. Means and Methods
   A. Construction loads
   B. Construction methods
   C. Temporary structures and facilities
   Number of Questions: 3-5

3. Soil Mechanics
   A. Lateral earth pressure
   B. Soil consolidation
   C. Effective and total stresses
   Number of Questions: 5-8

Info taken from:
<table>
<thead>
<tr>
<th>ABBREVIATION</th>
<th>DESIGN STANDARD TITLE</th>
</tr>
</thead>
</table>
  - National Design Specification for Wood Construction with Commentary  
  - National Design Specification Supplement, Design Values for Wood Construction  
  - Special Design Provisions for Wind and Seismic with Commentary |

Info taken from:  
EXAM MATERIALS (REQUIRED)

- NCEES approved calculator
  - List on NCEES.org

- Formal identification
  - Driver’s license, passport, etc.

- That’s it!
  - Everything else is provided
EXAM MATERIALS (PROVIDED)

- Morning portion (breadth)
  - NCEES Handbook
  - Similar to FE exam

- Afternoon portion (depth)
  - NCEES Handbook
  - All applicable codebooks
PE STUDY MATERIALS

PE MATERIALS
PE EXAM STUDY MATERIALS

- Codes/standards needed are provided
  - Don’t bring codes to the exam

- Study with test material

- Supplement with additional text
PE EXAM STUDY MATERIALS

▪ CODES/STANDARDS

Explore options and insights here: www.rockthePEexam.com
PE EXAM STUDY MATERIALS

- TEXTBOOKS

![Image of textbooks]

Explore options and insights here: www.rockthePEexam.com
PE EXAM STUDY MATERIALS

- PRACTICE PROBLEMS

Explore options and insights here:
www.rockthePEexam.com
PE EXAM STUDY MATERIALS

▪ COURSES
  ▪ PPI
  ▪ CEA (Civil Engineering Academy)
  ▪ EET
  ▪ School of PE
  ▪ ASCE Local Chapter

Explore options and insights here: www.rockthePEexam.com
STUDY GROUPS

YOU’RE NOT ALONE!!

- Facebook Groups
- Engineering Forums
- Co-workers
- Colleagues
CALIFORNIA SEISMIC EXAM

Explore options and insights here:
www.rockthePEexam.com
PE EXAM STUDY MATERIALS

- CALIFORNIA SURVEYING EXAM

Explore options and insights here: www.rockthePEexam.com
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WHAT TO EXPECT ON THE SE EXAM

FORMAT · SITE · ENVIRONMENT · EXAM SPEC · MATERIALS
EXAM FORMAT

- Pencil-and-paper Exam
  - 16hrs total (2x 8hr exams)
  - April & October
  - Open book

- Gravity Exam (8hrs)
  - AM - 40 multiple choice questions
  - PM – 4 open response questions

- Lateral Exam (8hrs)
  - AM - 40 multiple choice questions
  - PM – 4 open response questions

Info taken from:
www.ncees.org/engineering/pe-structural/
EXAM SITES

- Open room
  - Similar to pencil-and-paper PE exam
EXAM ENVIRONMENT

- Table
- Chair
- Books/Materials
EXAM SPECS

- NCEES outlines what to expect
  - Exam topics
  - Approximate number of questions
- Design standards and codes

Info taken from: www.ncees.org/engineering/pe-structural/
Vertical Forces (Gravity/Other) and Incidental Lateral Component of the Structural Engineering BREADTH Exam Specifications

Effective Beginning with the April 2018 Examinations

- The 4-hour Vertical Forces (Gravity/Other) and Incidental Lateral breadth exam is offered in the morning on exam day and focuses on gravity loads. It contains 40 multiple-choice questions.

- The knowledge areas specified as examples of kinds of knowledge are not exclusive or exhaustive categories.

- Score results are combined with depth exam results for final score of this component.

I. Analysis of Structures
   13
   A. Generation of Loads
      1. Dead
      2. Live (e.g., occupancy, roof, pedestrian)
      3. Moving (e.g., vehicular, crane)
      4. Impact (e.g., vehicular, crane, elevator)
      5. Vessel collision
      6. Earth pressure
      7. Differential settlement
      8. Hydrostatic/hydrodynamic
      9. Flood
      10. Snow

Info taken from:
www.ncees.org/engineering/pe-structural/
Vertical Forces (Gravity/Other) and Incidental Lateral Component of the Structural Engineering DEPTH Exam Specifications

Effective Beginning with the April 2018 Examination

The 4-hour Vertical Forces (Gravity/Other) and Incidental Lateral depth exam is offered in the afternoon on exam day. The depth modules of the Structural Engineering exam focus on a single area of practice in structural engineering. Examinees must choose either the BUILDINGS or the BRIDGES module. Examinees must work the same module on both components. That is, if bridges is the module chosen in the Vertical Forces component, then bridges must be the module chosen in the Lateral Forces component. All questions are constructed response (essay).

The exam uses the US Customary System (USCS) of units.

BUILDINGS
The Vertical Forces (Gravity/Other) and Incidental Lateral Structural Engineering depth exam in BUILDINGS covers loads, lateral earth pressures, analysis methods, general structural considerations (element design), structural systems integration (connections), and foundations and retaining structures. This 4-hour module contains one problem from each of the following areas:

- Steel structure
- Concrete structure
- Wood structure
- Masonry structure

All problems are equally weighted. At least one problem includes a multistory building, and at least one problem includes a foundation.

Info taken from:
www.ncees.org/engineering/pe-structural/
### Structural Engineering Design Standards

These standards apply to the Vertical and Lateral components of the Structural Engineering exam.

Effective Beginning with the October 2021 Examinations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Design Standard Title</th>
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<tbody>
<tr>
<td>AASHTO</td>
<td>AASHTO LRFD Bridge Design Specifications, 8th edition, American Association of State Highway &amp; Transportation Officials, Washington, DC.</td>
</tr>
<tr>
<td>ACI 318</td>
<td>Building Code Requirements for Structural Concrete, 2014 edition, American Concrete Institute, Farmington Hills, MI.</td>
</tr>
<tr>
<td>AISC</td>
<td>Seismic Design Manual, 3rd edition, American Institute of Steel Construction, Chicago, IL.</td>
</tr>
<tr>
<td>AISI S100</td>
<td>North American Specification for the Design of Cold-Formed Steel Structural Members, 2016 edition, with AISI S540-15 and AISI S400-15/S1-16, American Iron and Steel Institute, Washington, DC.</td>
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</tbody>
</table>

Info taken from: www.ncees.org/engineering/pe-structural/
EXAM MATERIALS (REQUIRED)

- NCEES approved calculator
  - List on NCEES.org

- Formal identification
  - Driver’s license, passport etc.
EXAM MATERIALS (RECOMMENDED)

- Materials
  - Codes/standards
  - Design aids
  - Textbooks
  - Notes
  - Etc.

- Snacks

- Watch
SE EXAM STUDY MATERIALS

- Codes/standards
- Textbooks
- Test material
SE EXAM STUDY MATERIALS

- CODES/STANDARDS

Explore options and insights here:
www.rocktheSEexam.com
SE EXAM STUDY MATERIALS

- TEXTBOOKS

- PE STRUCTURAL REFERENCE MANUAL
- Seismic Principles
- 2018 IBC® SEAOC STRUCTURAL/SEISMIC DESIGN MANUAL

Explore options and insights here:
www.rocktheSEexam.com
SE EXAM STUDY MATERIALS

- PRACTICE PROBLEMS

Explore options and insights here: www.rocktheSEexam.com
SE EXAM STUDY MATERIALS

▪ COURSES
  ▪ PPI
  ▪ School of PE
  ▪ NCSEA

Explore options and insights here:
www.rocktheSEexam.com
SE EXAM STUDY MATERIALS

- STUDY GROUPS
  - YOU’RE NOT ALONE!!
    - Facebook Groups
    - Engineering Forums
    - Co-workers
    - Colleagues

Does anybody know how to study?
KAHOOT

READY?...

GAME PIN
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IDEAS FOR STUDY PLANS…
- Study the “Code”
IDEAS FOR STUDY PLANS...
- NCEES Exam Specs

**CIVIL BREADTH Exam Specifications**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Questions</th>
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<tbody>
<tr>
<td>I. Project Planning</td>
<td>4</td>
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<td>II. Means and Methods</td>
<td>3</td>
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<tr>
<td>III. Soil Mechanics</td>
<td>6</td>
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**CIVIL–STRUCTURAL DEPTH Exam Specifications**

<table>
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<th>Category</th>
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<tr>
<td>I. Analysis of Structures</td>
<td>14</td>
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# PE/SE EXAM STUDY PLAN

**IDEAS FOR STUDY PLANS...**
- Create your own

## SE Study Plan

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- 1 hrs/wkday
- 6 hrs/Saturday
- 0 hrs/Sunday

![Dunn Associates, Inc. Logo](https://via.placeholder.com/150.png?text=Dunn+Associates%2C+Inc.)

Consulting Structural Engineers
**PE/SE EXAM STUDY PLAN**

- **IDEAS FOR STUDY PLANS…**
  - Create your own

![Google Sheets Study Plan](image-url)
IDEAS FOR STUDY PLANS...

- Create a schedule/routine
1 MONTH OUT

- Take a practice test
  - Make it realistic
  - Identify strong/weak areas

- Dial back your studies

- Practice problems

- Keep tabbing (SE exclusive)
1 WEEK OUT

- Take another practice test
  - Make it realistic
  - Muscle memory training for the next week

- Stop your studies

- Practice problems

- Keep tabbing (SE exclusive)
1 DAY OUT

▪ Take the day off
▪ Relax & rest your brain
▪ Do something fun
▪ Double check your materials
DAY OF THE EXAM

▪ Stay on your routine

▪ Wake up and arrive early

▪ Bring your favorite drink/treat
What it used to be:
What it is now:

CTRL + F
PE EXAM TRICKS

- Get familiar with the handbook
- Read the question carefully
- Make an initial educated guess
- Do NOT leave any question blank
PE EXAM TRICKS

- Skip problems you don’t know
  - Flag problems

- Multiple Choice
  - They’ll try and trick you – trick them!

"Well, well, well. How the turntables."
SE EXAM TRICKS

- Get the proper materials
  - Prepare more, stress less

- Get there early
  - No added stress

- Leave doubts behind
  - Get in the right mindset

Info taken from: hpstr.in/ExamCheats
SE EXAM TRICKS

- Less is more
  - Clear your desk

- Read problems thoroughly
  - Pay attention

- Sketch something
  - Get your mind moving

Info taken from: hpstr.in/ExamCheats
SE EXAM TRICKS

- Slow down, but be fast
  - Don’t make silly mistakes

- Move on
  - Build momentum

- Relax
  - Focus on the moment at hand

Info taken from: hpstr.in/ExamCheats
SE EXAM TRICKS

- “THE” Strategy (aka The Hipster Engineer Strategy)
  - Scantron markings
    
    |   A   |   B   |   C   |   D   |
    |-------|-------|-------|-------|
    |  24   |  ✗    |  ✗    |  ✔    |
    |  25   |  ✗    |  ✔    |  ✗    |
    |  26   |  ✗    |  ☑    |  ☑    |
    |  27   |  ☑    |  ☑    |  ☑    |
  
  - 15 minutes, 5 minutes, 1 minute
    
    ✗  -->  ☑
    ✗  -->  ☑
    ☑  -->  ☐
SE EXAM TRICKS

- Breadth (AM) tips…
  - Skip AASHTO problems
  - Review/rate problems
  - Low hanging fruit
  - Remember the time limit
  - No bubble left behind!
SE EXAM TRICKS

- Depth (PM) tips…
  - Review problems
  - Low hanging fruit
  - Remember the time limit
  - Write the process down
AFTER PASSING THE EXAM

STAMP + RESPONSIBILITY • RESPONSIBILITIES + RAISES • GROWTH
STAMPS & RESPONSIBILITY

- “Responsible Charge”
- Liability
Responsibilities vs raises
GROWTH

- Personal growth
- Professional Growth
- PDH’s
- SEAU involvement
KAHOOT

READY?...

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820 5399
Q & A

ASK ANYTHING ABOUT THE FE, PE, OR SE EXAM
ADDITIONAL QUESTIONS?
REACH OUT VIA EMAIL OR CONNECT VIA LINKEDIN

Jake Dunn, PE
- JDunn@dunn-se.com
- bit.ly/JDunnLinkedIn

Josh Ogle, SE
- JOgle@dunn-se.com
- hpstr.in/LinkedIn

JAKE DUNN, PE & JOSH OGLE, SE
MARCH 1, 2022
SEAU CONFERENCE PRESENTATION