



## **Studying for the Civil Engineering License Exam? We just made it easier!**

The National Society of Professional Engineers is now offering instructor-led PE Exam review courses, using textbooks from the leader in exam preparation, Kaplan AEC Education. These courses combine quality instruction with thorough materials to help you earn your Professional Engineer License. In class, you will:

- Study the Principles and Practice of Civil Engineering for the PE Exam
- Review example problems with step-by-step solutions
- Complete practice exams
- Learn dos and don'ts for taking the test
- Get personalized coaching from a qualified instructor

Classes are forming now with the Professional Engineers of Colorado. Please see the application and information enclosed for more details.

**SEH, Inc., Denver, Colorado (Colorado Blvd & I-25)**

**Saturdays, August 2 – October 11, 2008**

NSPE member: \$595 (includes textbooks)

Non-member: \$795 (includes textbooks)

**For more information please contact:**

Professional Engineers of Colorado: Erin Erickson  
(303) 480-1160 or [eerickson@imigroup.com](mailto:eerickson@imigroup.com)



**Professional Engineers  
of Colorado**



## **P.E. Exam Review - Student Application**

If you are planning to take the P.E. Civil Breadth Exam on October 24, 2008 and are interested in participating in a 10-week review session, taught by a P.E., please complete the student application below. Once your application has been received, the exam review materials will be ordered by the PEC office and shipped to the address listed below. Additionally, PEC will provide you a P.E. Mentor, should you have questions and need outside assistance.

| <b>Review Session Date<br/>(August – October 2008)</b> | <b>Time</b>              | <b>Discipline</b>                        |
|--|--------------------------|--|
| Saturday, August 2, 2008:                              | (8:00 a.m. – 12:00 p.m.) | Construction (Part 1)                    |
| Saturday, August 9, 2008:                              | (8:00 a.m. – 12:00 p.m.) | Construction (Part 2)                    |
| Saturday, August 16, 2008:                             | (8:00 a.m. – 12:00 p.m.) | Geotechnical (Part 1)                    |
| Saturday, August 23, 2008:                             | (8:00 a.m. – 12:00 p.m.) | Geotechnical (Part 2)                    |
| Saturday, September 6, 2008:                           | (8:00 a.m. – 12:00 p.m.) | Structural (Part 1)                      |
| Saturday, September 13, 2008:                          | (8:00 a.m. – 12:00 p.m.) | Structural (Part 2)                      |
| Saturday, September 20, 2008:                          | (8:00 a.m. – 12:00 p.m.) | Transportation                           |
| Saturday, September 27, 2008:                          | (8:00 a.m. – 12:00 p.m.) | Water Resources & Environmental (Part 1) |
| Saturday, October 4, 2008:                             | (8:00 a.m. – 12:00 p.m.) | Water Resources & Environmental (Part 2) |
| Saturday, October 11, 2008:                            | (8:00 a.m. – 12:00 p.m.) | Water Resources & Environmental (Part 3) |

**All Exam Review Sessions will be located at:**

**SEH, Inc.**

2000 S Colorado Blvd #6000  
Denver, CO 80222  
(I-25 & Colorado Blvd.)

**Registration Information:**

Please select from the following registration fee options. Please include the application with a check made payable to "Professional Engineers of Colorado" no later than **July 18, 2008**.

- NSPE Member Fee - \$595 (Includes textbooks)**
- Non-Member Fee - \$795 (Includes textbooks)**

**Student Civil Review Materials Include: (New Editions 1-2008)**

- Civil Engineering PE License Review 17/e - \$76.97
- Civil Engineering Problem-Solving Flowcharts for the PE Exam - \$31.47

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Shipping Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**Please submit application to:**

Professional Engineers of Colorado  
3030 W. 81<sup>st</sup> Avenue, Westminster, CO 80031  
Phone: 303-480-1160; Fax: 303-458-0002, www.pec.org

**National Council of Examiners for Engineering and Surveying  
Principles and Practice of Engineering Civil BREADTH Exam Specifications  
Effective Beginning with the April 2008 Examinations**

- I. CONSTRUCTION** **20%**
- A. Earthwork Construction and Layout
    - i. Excavation and embankment (cut and fill)
    - ii. Borrow pit volumes
    - iii. Site layout & control
  - B. Estimating Quantities and Costs
    - i. Quantity take-off methods
    - ii. Cost estimating
  - C. Scheduling
    - i. Construction sequencing
    - ii. Resource scheduling
    - iii. Time-cost trade-off
  - D. Material Quality Control and Production
    - i. Material testing (e.g., concrete, soil, asphalt)
  - E. Temporary Structures
    - i. Construction loads
- II. GEOTECHNICAL** **20%**
- A. Subsurface Exploration and Sampling
    - i. Soil classification
    - ii. Boring log interpretation (e.g., soil profile)
  - B. Engineering Properties of Soils and Materials
    - i. Permeability
    - ii. Pavement design criteria
  - C. Soil Mechanics Analysis
    - i. Pressure distribution
    - ii. Lateral earth pressure
    - iii. Consolidation
    - iv. Compaction
    - v. Effective and total stresses
  - D. Earth Structures
    - i. Slope stability
    - ii. Slabs-on-grade
  - E. Shallow Foundations
    - i. Bearing capacity
    - ii. Settlement
  - F. Earth Retaining Structures
    - i. Gravity walls
    - ii. Cantilever walls
    - iii. Stability analysis
    - iv. Braced and anchored excavations
- III. STRUCTURAL** **20%**
- A. Loadings
    - i. Dead loads
    - ii. Live loads
    - iii. Construction loads
  - B. Analysis
    - i. Determinate analysis
  - C. Mechanics of Materials
    - i. Shear diagrams
    - ii. Moment diagrams
    - iii. Flexure
    - iv. Shear
    - v. Tension
    - vi. Compression
    - vii. Combined stresses

- viii. Deflection
- D. Materials
  - i. Concrete (plain, reinforced)
  - ii. Structural steel (structural, light gage, reinforcing)
- E. Member Design
  - i. Beams
  - ii. Slabs
  - iii. Footings

**IV. TRANSPORTATION 20%**

- A. Geometric Design
  - i. Horizontal curves
  - ii. Vertical curves
  - iii. Sight distance
  - iv. Superelevation
  - v. Vertical and/or horizontal clearances
  - vi. Acceleration and deceleration

**V. WATER RESOURCES AND ENVIRONMENTAL 20%**

- A. Hydraulics – Closed Conduit
  - i. Energy and/or continuity equation (e.g., Bernoulli)
  - ii. Pressure conduit (e.g., single pipe, force mains)
  - iii. Closed pipe flow equations including Hazen-Williams, Darcy-Weisbach Equation
  - iv. Friction and/or minor losses
  - v. Pipe network analysis (e.g., pipeline design, branch networks, loop networks)
  - vi. Pump application and analysis
- B. Hydraulics – Open Channel
  - i. Open-channel flow (e.g., Manning’s equation)
  - ii. Culvert design
  - iii. Spillway capacity
  - iv. Energy dissipation (e.g., hydraulic jump, velocity control)
  - v. Stormwater collection (e.g., stormwater inlets, gutter flow, street flow, storm sewer pipes.)
  - vi. Flood plains/floodways
  - vii. Flow measurement – open channel
- C. Hydrology
  - i. Storm characterization (e.g., rainfall measurement and distribution)
  - ii. Storm frequency
  - iii. Hydrographs application
  - iv. Rainfall intensity, duration, and frequency (IDF) curves
  - v. Time of concentration
  - vi. Runoff analysis including Rational and SCS methods
  - vii. Erosion
  - viii. Detention/retention ponds
- D. Wastewater Treatment
  - i. Collection systems (e.g., lift stations, sewer networks, infiltration, inflow)
- E. Water Treatment
  - i. Hydraulic loading
  - ii. Distribution systems

**TOTAL: 100%**