

CE 4200

Professional Engineering Practice Issues

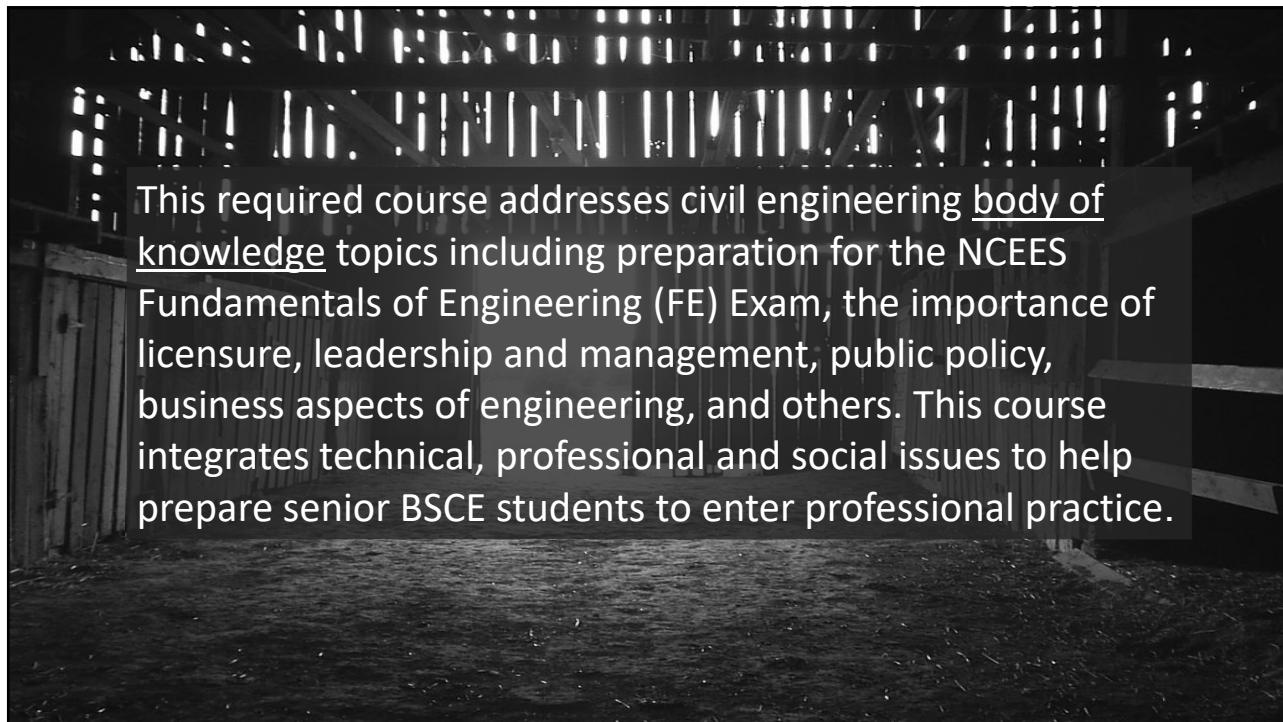
Spring 2022 Semester

William D. Lawson, P.E., Ph.D.

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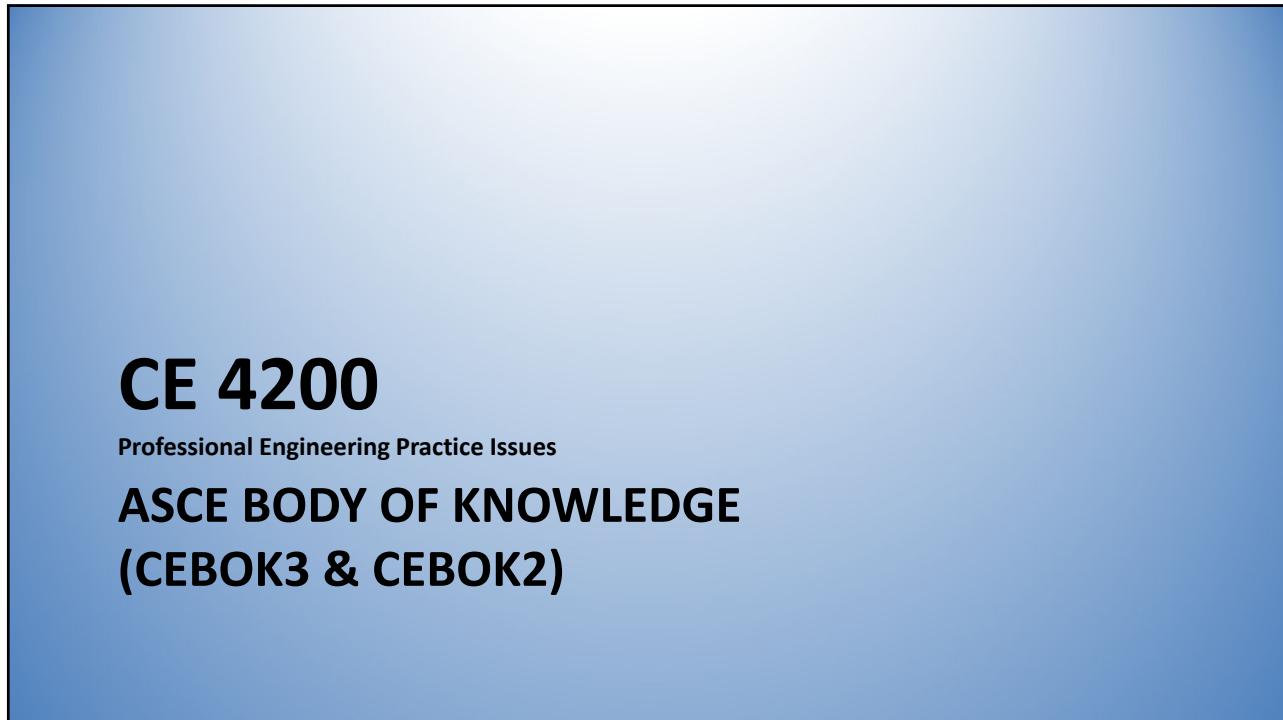
The screenshot shows the ASCE (American Society of Civil Engineers) website. The top navigation bar includes links for Education & Careers, Membership & Communities, Education & Careers, Conferences & Events, and Issues & Advocacy. A sub-navigation menu under 'Education & Careers' is open, showing options like ASCE Continuing Education, Licensure & Certification, and Career & Workforce Development. The main content area features a section titled 'CIVIL ENGINEERING BODY OF KNOWLEDGE'. It describes civil engineering as a demanding field requiring a broad knowledge base and combinations of skills. The purpose of the 'Civil Engineering Body of Knowledge' is defined as defining the knowledge, skills, and attitudes needed for professional practice. A call-to-action button says 'Download a free PDF copy of the Civil Engineering Body of Knowledge: Preparing the Future Civil Engineer (3rd Edition)'. To the right, there is a thumbnail image of the book cover for 'Civil Engineering Body of Knowledge: Preparing the Future Civil Engineer, Third Edition'.

2



This required course addresses civil engineering body of knowledge topics including preparation for the NCEES Fundamentals of Engineering (FE) Exam, the importance of licensure, leadership and management, public policy, business aspects of engineering, and others. This course integrates technical, professional and social issues to help prepare senior BSCE students to enter professional practice.

3



CE 4200

Professional Engineering Practice Issues

**ASCE BODY OF KNOWLEDGE
(CEBOK3 & CEBOK2)**

4

Exercise 1.1

What does it take
to be a **SUCCESSFUL** Civil Engineer?



1. Think about and jot down at least 3 skills – *other than* technical competency – you think are necessary to successfully practice civil engineering (individual assignment).
2. Be prepared to discuss your ideas.

5

Civil Engineering Body of Knowledge: Preparing the Future Civil Engineer

6

ASCE Policy Statement 465

ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS

MEMBERSHIP & COMMUNITIES EDUCATION & CAREERS CONFERENCES & EVENTS ISSUES & ADVOCACY

Issues & Advocacy > Public Policy Statements >

KEY PROGRAMS

Infrastructure

- 2017 Report Card
- Failure to Act Reports
- Infrastructure Policy Reports
- Life Cycle Cost Analysis Report
- State and Regional Report Cards

Engineer Tomorrow

Sustainability

- Sustainability at ASCE
- Sustainability Resources
- Sustainability Project Profiles
- Envision
- Sustainable Infrastructure Certificate

POLICY STATEMENT 465 - THE CIVIL ENGINEERING BODY OF KNOWLEDGE AND THE PRACTICE OF CIVIL ENGINEERING

Approved by the Committee on Preparing the Future Civil Engineer on July 16, 2019
 Approved by the Committee on Professional Advancement on July 24, 2019
 Approved by the Public Policy Committee on August 9, 2019
 Adopted by the Board of Direction on October 14, 2019

POLICY

The American Society of Civil Engineers (ASCE) supports the attainment of the Civil Engineering Body of Knowledge (CEBOK) as a requirement for exercising responsible charge in the practice of civil engineering. The CEBOK is defined as the knowledge, skills, and attitudes necessary to exercise responsible charge in the practice of civil engineering and is attained through undergraduate and post-graduate engineering education, mentored experience, and self-development. Licensure constitutes a legal authority to practice engineering; however, the requirements for licensure do not ensure attainment of the CEBOK.

ASCE encourages institutions of higher education, governments, employers, engineers,

7

CEBOK1 (2004) **CEBOK2 (2008)** **CEBOK3 (2019)**

8

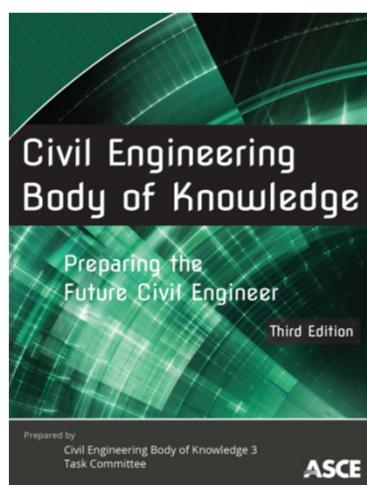
Outcomes

Civil Engineering Body of Knowledge for the 21st Century

- Outcomes are statements that describe what individuals are expected to know and be able to do by the time of entry into the practice of civil engineering at the professional level in the 21st century—that is, **attain licensure**.
- Outcomes define the knowledge, skills, and attitudes that individuals acquire through appropriate formal education and pre-licensure experience.

9

CEBOK3



- Published Mar 2019
- Compliant with 2016-17 and later ABET Program Objectives
- 21 Learning Outcomes
- Cognitive and Affective levels of achievement

10

CEBOK3 Outcomes

Civil Engineering Body of Knowledge for the 21st Century

Table ES-1. Civil Engineering Body of Knowledge Outcomes.

Foundational	Engineering Fundamentals
Mathematics	Materials Science
Natural Sciences	Engineering Mechanics
Social Sciences	Experiment Methods and Data Analysis
Humanities	Critical Thinking and Problem Solving
Technical	Professional
Project Management	Communication
Engineering Economics	Teamwork and Leadership
Risk and Uncertainty	Lifelong Learning
Breadth in Civil Engineering Areas	Professional Attitudes
Design	Professional Responsibilities
Depth in a Civil Engineering Area	Ethical Responsibilities
Sustainability	

11

Example 1.2 CEBOK3 Professional Responsibilities



1. Domain (cognitive or affective)
2. Level of achievement (SIX levels, Bloom's taxonomy)
3. Demonstrated ability (note the verb)
4. Typical pathway (expert status, for licensure, for undergraduate study)

12

PROFESSIONAL ENGINEERING PRACTICE ISSUES

Professional Responsibilities

Table 2-20a. Professional Responsibilities (Cognitive Domain).

Cognitive Domain Level of Achievement	Demonstrated Ability	Typical Pathway
1 Remember (remember previously learned material)	Identify professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing, and innovation.	Undergraduate education
2 Comprehend (grasp the meaning of learned material)	Explain professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing, and innovation.	Undergraduate education
3 Apply (use learned material in new and concrete situations)	Apply professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing, and innovation.	Mentored experience
4 Analyze (break down learned material into its component parts so that its organizational structure may be understood)	Illustrate professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing, and innovation.	Mentored experience
5 Synthesize (put learned material together to form a new whole)	Integrate professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing, and innovation.	Mentored experience
6 Evaluate (judge the value of learned material for a given purpose)	Assess the integration of professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing, and innovation.	

13

Table 2-20b. Professional Responsibilities (Affective Domain).

Affective Domain Level of Achievement	Demonstrated Ability	Typical Pathway
1 Receive (be aware of, willing to receive, and be attentive to a particular phenomenon or behavior)	Acknowledge professional responsibilities relevant to the practice of civil engineering including safety, legal issues, licensure, credentialing, and innovation.	Undergraduate education
2 Respond (actively participate in activity, attend to task, react to motivation)	Examine professional responsibilities relevant to the practice of civil engineering including safety, legal issues, licensure, credentialing, and innovation.	Undergraduate education
3 Value (attach value to particular object, phenomenon, or behavior)	Value professional responsibilities relevant to the practice of civil engineering including safety, legal issues, licensure, credentialing, and innovation.	Mentored experience
4 Organize (sort values into priorities by contrasting different values, resolve conflicts between them, and creating a unique value system)	Form judgments about professional responsibilities relevant to the practice of civil engineering including safety, legal issues, licensure, credentialing, and innovation.	Self-developed
5 Characterize (follow a value system that controls behavior that is pervasive, consistent, predictable, and a defining characteristic)	Advocate for professional responsibilities relevant to the practice of civil engineering including safety, legal issues, licensure, credentialing, and innovation.	

14

Where This Course Fits In



<http://www.iheartorganizing.com>

15

Civil Engineering Curriculum

Dynamic Enrollment Management
Plan Curriculum for Bachelor of
Science Civil Engineering Texas Tech

Name: _____
 R#:

University _____

Date Entered COE: _____

Pre-Entry

Freshman

Sophomore

Junior

Senior

Term F13	Math 1451 *Math 1350 or equiv. *Grade A	Math 1452 *Math 1451	Math 2450 *Math 1452	Math 3350 *Math 1452
	Chem 1307 *Chem 1306 *Chem 1305 *Chem 1304	Chem 1308 *Chem 1307 *Chem 1306 *Chem 1305 *Chem 1304	ECE 3301 *Math 1452	CE 3303 *CE 3305 *CE 3301

E GR1207

Psys 1405

CE 2305

*IE 2324

*Math 1451

*Phys 1402

*Math 1452

*Math 1453

*Math 1454

*Math 1455

*Math 1456

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16

Assignment 1: Compare DEMP vs. BOK3E

17

CE 4200

Professional Engineering Practice Issues

ABOUT THE COURSE

18

F2F & Distance Course Format



19

COURSE SYLLABUS
Section 001/D01, Civil Engineering Room 007, 12:00pm-12:50pm MW
Spring 2022

2021-22 Catalog Description and Prerequisites
CE 4200, Professional Engineering Practice Issues (2 credit hours)
CE 4200, Professional Engineering Practice Issues (2). Prerequisite: Must be within two long semesters of graduation [i.e., May 2022, Dec 2022]. A study of engineering body of knowledge topics to prepare students for engineering practice; topics include the FE Exam, licensure, leadership and others.

Online and Distance Modality Notice
CE 4200, Section 001 has been designated for "Face-to-Face" instruction. CE 4200, Section D01 is designated as "Distance" modality. For all intents and purposes, these two course sections will be combined and taught simultaneously. Technical and/or equipment requirements, including remote proctoring software, are discussed herein.

Instructor
William D. Lawson, P.E., Ph.D; Room 215D, Civil Engr. Bldg
Phone: 806.834.4484
Email: william.d.lawson@tlu.edu

Available Assistance
The instructor office hours are Tuesday-Thursday, 11:00am-12:00noon, or virtually by appointment - please schedule by email.

Textbooks (Required)
ASCE (2019). Civil Engineering Body of Knowledge for the 21st Century: Preparing the Future Civil Engineer. Third Edition. American Society of Civil Engineers (ASCE), Reston, VA.
ISBN (PDF): 9780784481974 [[FREE download](#)].

ASCE (2008). Civil Engineering Body of Knowledge for the 21st Century: Preparing the Civil Engineer for the Future. Second Edition. American Society of Civil Engineers (ASCE). Reston, VA. ISBN-13: 978-0-7844-0965-7 [[FREE download](#)].

Reference Handbook, Edition 10.0.1. National Council of Examiners for Engineering and Surveying (NCEES), Clemson, SC. Third Printing July 2021, ISBN: 978-1-63598-416-0 [[FREE download](#)].

20

Spring 2022 Course Schedule CE 4200-001/D01: Professional Engineering Practice Issues									
Mtg No	Date	Day	Topic	BOK3E Outcome	Instructor	Instruct Modality	Assignment	Assign Due	
1	12-Jan	W	ASCE Body of Knowledge Course Introduction		Lawson	F2F	Assign 1 (100 pts)	19-Jan	
2	17-Jan	M	Martin Luther King, Jr. Day Holiday						
3	19-Jan	W	Trust and Trustworthiness in Engr-Client Relations	19	Lawson	F2F	Bonus 1 (25 pts)	26-Jan	
4	24-Jan	M	Attitudes Beneficial to Civil Engineering	19	Lawson	F2F	Assign 2 (100 pts)	7-Feb	
5	26-Jan	W	Early Career Guidance	19	Lawson	F2F+	Assign 3 (100 pts)	14-Feb	
6	31-Jan	M	Engineering Licensure & Application	20	Lawson	F2F			
7	2-Feb	W	NCEES Fundamentals of Engineering (FE) Exam	20	Lawson	F2F	Mock FE (200 pts)	02/08 02/22	
8	9-Feb	W	FE Exam Performance	MFE	20	F2F+	Bonus 2 (25 pts)	21-Feb	
9	14-Feb	M	FE Exam Knowledge & Preparation	MFE	20	F2F	∅		
10	16-Feb	W	Qualifications Based Selection	MFE	20	F2F	Assign 4 (100 pts)	7-Mar	
11	21-Feb	M	Engineering Job Fair (Civic Center)	MFE	20	F2F	∅		
12	23-Feb	W	No lecture (Mock FE)		17	Lawson	Video	Bonus 3 (25 pts)	
13	26-Feb	M	Leadership in Civil Engineering		17	Lawson	F2F	Quiz 1 (50 pts)	
14	2-Mar	W	Diversity & Inclusion		9	Lawson	F2F	23-Mar	
15	7-Mar	M	Ted Talks: Leadership Excellence		9	Online	Video		
16	9-Mar	W	Ted Talks: Leadership Excellence		9	Online	Video	Bonus 4 (25 pts)	
			Spring Vacation		9	W. Goff	Present	28-Mar	
					9	Lawson	F2F		
					9	Lawson	F2F	11-Apr	

21

1 2 3

Civil Engineering Body of Knowledge
Preparing the Future Civil Engineer
Third Edition
Prepared by Civil Engineering Body of Knowledge Task Committee ASCE

NCEES
FE Reference Handbook 10.1
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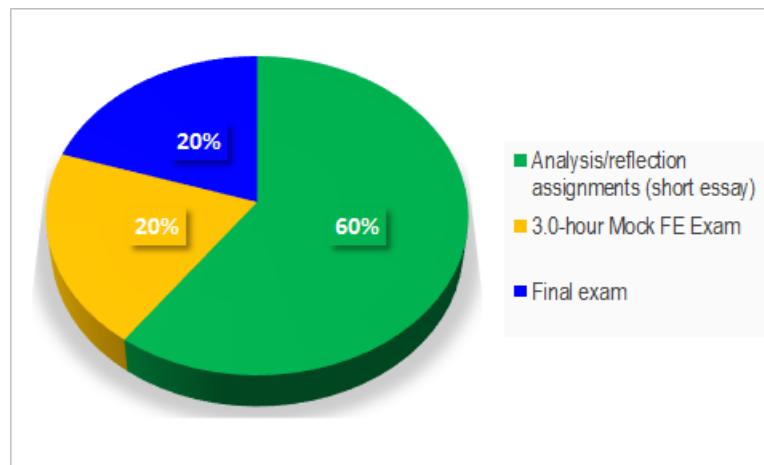
FE Civil Review
Michael R. Lindeburg, PE

free
free?
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Textbooks

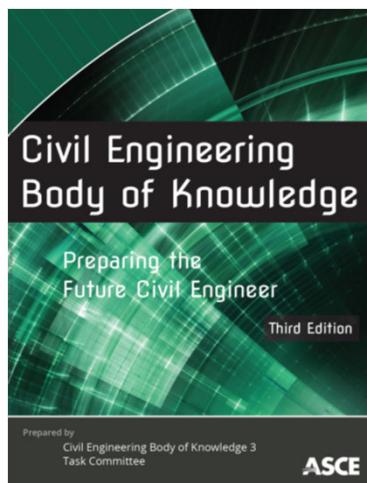
22

Evaluation Process



23

ANALYSIS/ REFLECTION ASSIGNMENTS



- ASCE BODY OF KNOWLEDGE
- EARLY CAREER GUIDANCE
- ENGINEERING LICENSURE
- LEADERSHIP IN CIVIL ENGINEERING
- PROJECT MANAGEMENT (Quiz)
- ENGINEERING JUDGMENT
- PROFESSIONALISM (Quiz)
- +- MULTIPLE BONUS OPPORTUNITIES

24

MOCK FE EXAM

The Mock Fundamentals of Engineering (FE) Exam is an approximately half-length version of the real NCEES FE Exam for Civil Engineering students. More specifically, the Mock FE is a diagnostic test where students complete 62 FE-type questions over 14 topics of civil engineering knowledge in 3 hrs.

25

FINAL EXAM

- Based on your review of the Texas Engineering Practice Act and Board Rules
- You will be asked to consider a series of real-world professional conduct and ethics scenarios
- Following each scenario, you will be asked one or more questions where you will choose the best answer for each of the questions

26

CE 4200

Professional Engineering Practice Issues

ANY QUESTIONS?