



A Comparison of Licensed Engineers' Conduct Requirements, the ASCE Code of Ethics, and EAC-ABET Civil Engineering Accreditation Criteria

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Abstract

The 2021-2022 EAC-ABET civil engineering program criteria (CEPC) requires programs to have curriculums that prepare graduates to “analyze issues in professional ethics and explain the importance of professional licensure.” Accredited civil engineering programs are at liberty to determine how they meet these criteria. Many civil engineering programs require students to study the American Society of Civil Engineers (ASCE) Code of Ethics (COE) to meet the CEPC criteria; however, these ethical standards only apply to ASCE members and are not legally enforceable. Professional conduct responsibilities enumerated in state licensure laws and rules are legally enforceable standards that apply to anyone who practices engineering in the state’s jurisdiction regardless of whether they are licensed. States require compliance with licensure laws to protect public health, safety, and welfare. Every state has the prerogative to develop their own professional conduct laws and rules which may or may not include content from sources such as the ASCE COE or the National Council of Examiners for Engineering and Surveying (NCEES) Model Rules. A study was conducted to compare the responsibilities in the ASCE COE and the NCEES Model Rules with the professional conduct requirements in the fifty state licensure laws and rules.

The thirty-six ethical responsibilities listed in the 2020 ASCE COE were used as a baseline for comparison. Thirteen COE Ethical Responsibilities were found in most licensure laws and rules, an additional six COE Ethical Responsibilities were found in at least 10% of the licensure laws and rules, and seventeen COE Ethical Responsibilities were found in fewer than 10% of the state licensure laws and rules. In addition, the study revealed that there are 36 professional conduct requirements listed in state laws and rules that are not included in the ASCE COE. In every case but one, the professional conduct requirements most often listed in state laws and rules were also listed in the NCEES Model Rules. In most cases, licensure violations occur due to a lack of knowledge of the laws and rules associated with the practice of engineering. The challenge facing the civil engineering profession is ensuring that civil engineering programs provide students with sufficient licensure law education to meet the CEPC and prepare them for professional practice as required by EAC-ABET Criterion 5. The study concludes that civil engineering curriculums that do not include key professional conduct topics found in most state licensure laws and rules risk not complying with EAC-ABET criteria.

Introduction

Civil engineering is a profession. The most fundamental characteristic of a profession is control over specialized work, performed by credentialed members of the profession, through licensure law [1]. State licensure laws are intended, first, to protect public safety and welfare, but they also regulate specialized work within the profession. In order for students to explain the importance of professional licensure, they must understand licensure laws and professional codes of conduct.

Many professional societies such as the American Society of Civil Engineers (ASCE) and the National Society of Professional Engineers (NSPE) maintain codes of ethics for their members. Compliance with the codes of ethics is encouraged and violations can result in loss of membership. However, violations of the ASCE and NSPE codes of ethics are not subject to civil and criminal penalties. In contrast, state licensure laws commonly include professional codes of conduct. Licensed engineers are required by law to comply with those professional conduct standards in the jurisdiction in which they are licensed. Violations can result in loss of license, fines, and incarceration in the most extreme cases. While codes of ethics are extremely important to a profession, the laws in a state are legally binding.

The difference between codes of ethics and state licensure laws and rules must be understood by practicing engineers. Upon graduation students should have a firm grasp of each and understand their legal standing. Civil engineering programs need to ensure that students not only know the difference between these documents, but are also able to differentiate the content.

Background

All 50 states regulate the practice of engineering through a set of state laws and regulations. Licensure laws are passed by state legislatures and approved by governors. States have a licensure board consisting of citizens from the state who oversee and enforce the licensure process and the practice of engineering in their jurisdiction. State legislatures delegate authority to licensure boards to promulgate rules and ensure the practical application of the laws. The rules are part of a state's administrative code and both the laws and rules are enforceable [2].

The National Council of Examiners for Engineering and Surveying (NCEES) is a group consisting of members from engineering and surveying licensure boards in all states and territories in the United States. Their purpose is to promote engineering licensure and facilitate mobility among jurisdictions. They have published Model Laws and Model Rules and encouraged their members to adopt them for use in their jurisdiction. [3]. NCEES has no legal authority over its members, but their model documents are often used as references for state laws and rules.

A group that strongly influences the civil engineering profession is the American Society of Civil Engineers (ASCE). Like NCEES, they have no legal authority over state laws and rules, but they do influence the profession in multiple ways. ASCE first published their Body of Knowledge for civil engineers in 2004. More recently, they made changes to the Body of Knowledge (BOK3) in 2019. The BOK3 reduced the number of outcomes from 24 to 21. BOK2 included a “professional and ethical responsibility” outcome with undergraduate civil engineering program

responsibility extending to Bloom's level 4. BOK3 created separate "professional responsibilities" and "ethical responsibilities" outcomes. Undergraduate civil engineering program responsibility was reduced to Bloom's level 2 for "professional responsibilities" and Bloom's level 3 for "ethical responsibilities" [4]. BOK3 describes "professional responsibilities" as issues relevant to the practice of civil engineering, including safety, legal issues, licensure, credentialing and innovation. BOK3 links "ethical responsibilities" to the ASCE COE and other applicable codes.

EAC-ABET is a non-profit group that accredits civil engineering programs in the United States. During each accreditation cycle, they update their general and program specific requirements. EAC-ABET civil engineering program criteria (CEPC) specifies topics that must be included in civil engineering curriculums. The CEPC requirements have included references to licensure since ASCE BOK1 was published in January 2004. The 2002-2003 CEPC criteria stated "The program must demonstrate that graduates have...an understanding of professional practice issues such as...the importance of professional licensure" [5]. Since the publication of the BOK1, CEPC requirements have changed twice.

Beginning with the 2008-2009 accreditation cycle the CEPC wording changed. It was modified to state "The curriculum must demonstrate that graduates can...explain the importance of professional licensure" [6]. During the 2016-2017 accreditation cycle, the CEPC criteria debuted a new requirement that "The curriculum must prepare graduates to...analyze issues in professional ethics," however the professional licensure curriculum requirement remained the same [7]. EAC-ABET made significant changes to the general accreditation criteria beginning with the 2019-2020 accreditation cycle. Most recently the 2021-2022 EAC-ABET Criterion 5 states "The program curriculum must provide adequate content...to ensure that students are prepared to enter the practice of engineering" [8]. EAC-ABET allows each civil engineering program the discretion to determine how general and CEPC accreditation standards are met.

ASCE is considering changes to the EAC-ABET CEPC [9]. Proposed changes include replacing

The curriculum must prepare graduates... to analyze issues in professional ethics and explain the importance of professional licensure

with

The curriculum must include topics necessary... to apply the ASCE Code of Ethics to an ethical dilemma and explain the professional attitudes and responsibilities of a civil engineer, including licensure and safety.

The proposed CEPC changes are driven by ASCE's Civil Engineering BOK3 [4]. The first change replaces "professional ethics" with the "ASCE Code of Ethics." The second change replaces the current focus on professional licensure with a broader focus on "professional attitudes," "professional responsibilities," and "safety."

Notwithstanding the proposed CEPC changes, EAC-ABET Criterion 5 requires accredited programs to provide adequate content to ensure that students are prepared to enter the practice of

engineering. The term “practice of engineering” is defined in 47 of the 50 state licensure laws and rules and applies primarily to specialized work performed by licensed engineers [10].

The following study was conducted to compare the ASCE Code of Ethics (COE) and professional conduct requirements in state licensure laws. The objectives were to review the 2021 state licensure laws in all fifty states to answer the following questions.

1. Are ASCE COE Ethical Responsibilities and state licensure professional conduct requirements mutually exclusive?
2. Which ASCE COE Ethical Responsibilities are not included in state licensure law professional conduct requirements?
3. What state licensure professional conduct requirements are not found in the ASCE COE list of Ethical Responsibilities?

Procedures

As previously discussed, all 50 states regulate the practice of engineering through a set of state laws and regulations. In this study the terms “laws” and “rules” are used to refer to these legal documents. Each of these documents was obtained during the period October 2021 to January 2022. They were reviewed for all references to ethics and professional conduct responsibilities.

The first step in this analysis was to identify the topics found in the ASCE Code of Ethics (COE) [11]. The COE was most recently updated in 2020 with a list of 36 ethical responsibilities. A condensed description of each ethical responsibility is shown in Table 1. For the discussion in this project, each ethical responsibility is categorized by a number (stakeholder) followed by a letter (ethical responsibility). For example, the ethical responsibility “Protect the health, safety, and welfare of the public” under the stakeholder category “Society” is denoted 1a. This follows a similar identification system to the one used in the ASCE COE.

The second step in the analysis was to review and categorize ethical and professional conduct requirements in every state law and rule. The wording of each professional conduct responsibility in state licensure laws and rules was carefully scrutinized due to variations in each state.

The third step in the analysis was to compare the ASCE COE topics with the ethical and professional conduct requirements in state laws and rules. These requirements were categorized as either substantially agreeing with a specific ASCE COE Ethical Responsibility or not listed.

In addition, the NCEES Model Rules were reviewed, categorized, and compared to the ASCE COE Ethical Responsibilities. Some states use the NCEES Model Rules as a guideline, but no state has adopted the Model Rules verbatim. The ethical and professional conduct provisions in the NCEES Model Rules were compared to each state’s licensure requirements.

Table 1 – An abbreviated list of the 36 ethical responsibilities in the ASCE Code of Ethics

Stakeholders	Ethical Responsibilities
Society (1)	<ul style="list-style-type: none"> a. Protect the health, safety, and welfare of the public b. Enhance the quality of life for humanity c. Express professional opinions truthfully d. Have zero tolerance for bribery, fraud, and corruption in all forms e. Endeavor to be of service in civic affairs f. Treat all persons with respect, dignity, and fairness g. Acknowledge historical, social, and cultural needs of communities h. Consider current and emerging technologies i. Report misconduct to the appropriate authorities
Natural and Built Environment (2)	<ul style="list-style-type: none"> a. Adhere to the principles of sustainable development b. Consider societal, environmental, and economic impacts c. Mitigate adverse societal, environmental, and economic effects d. Use resources wisely while minimizing resource depletion
Profession (3)	<ul style="list-style-type: none"> a. Uphold the honor, integrity, and dignity of the profession b. Practice engineering in compliance with all legal requirements c. Represent their professional qualifications and experience truthfully d. Reject practices of unfair competition e. Promote mentorship and knowledge-sharing equitably with engineers f. Educate the public on the role of civil engineering in society g. Continue professional development
Clients and Employers (4)	<ul style="list-style-type: none"> a. Act as faithful agents of their clients and employers b. Make clear to clients and employers any conflicts of interest c. Communicate any risks and limitations related to their work d. Present the consequences to clients and employers if their engineering judgment is overruled e. Keep clients' and employers' proprietary information confidential f. Perform services only in areas of their competence g. Approve, sign, or seal only work under their responsible charge
Peers (5)	<ul style="list-style-type: none"> a. Only take credit for professional work they have completed b. Provide attribution for the work of others c. Foster health and safety in the workplace d. Promote and exhibit inclusive, equitable, and ethical behavior e. Act with honesty and fairness on collaborative work efforts f. Encourage and enable the education and development of other engineers and prospective members of the profession g. Supervise equitably and respectfully h. Comment only in a professional manner on the work, professional reputation, and personal character of other engineers i. Report violations of the Code of Ethics to ASCE

Results

The study found that 49 of the 50 states have a section of their licensure laws or rules entitled “Rules of Professional Conduct” or a similarly titled section. No state included every ASCE COE Ethical Responsibility or every NCEES Model Rules professional conduct provision in their laws and rules. Many states had very detailed lists of professional conduct requirements that were not found in these ASCE and NCEES documents. All states have the authority to enforce their rules and laws, but 36 states explicitly require licensed engineers in their jurisdiction to have knowledge of all licensure laws and rules including the professional conduct provisions.

Figures 1 through 5 summarize the number of states that include the ASCE COE Ethical Responsibilities in their laws and rules. Figure 1 indicates that four of the nine ethical responsibilities for stakeholder 1 (Society) are in at least 42 state licensure laws or rules. None were found in all 50 states, but ethical responsibility 1a was found in 49 states. Of the remaining five ethical responsibilities, three were not found in any state and two were only found in three state licensure laws or rules.

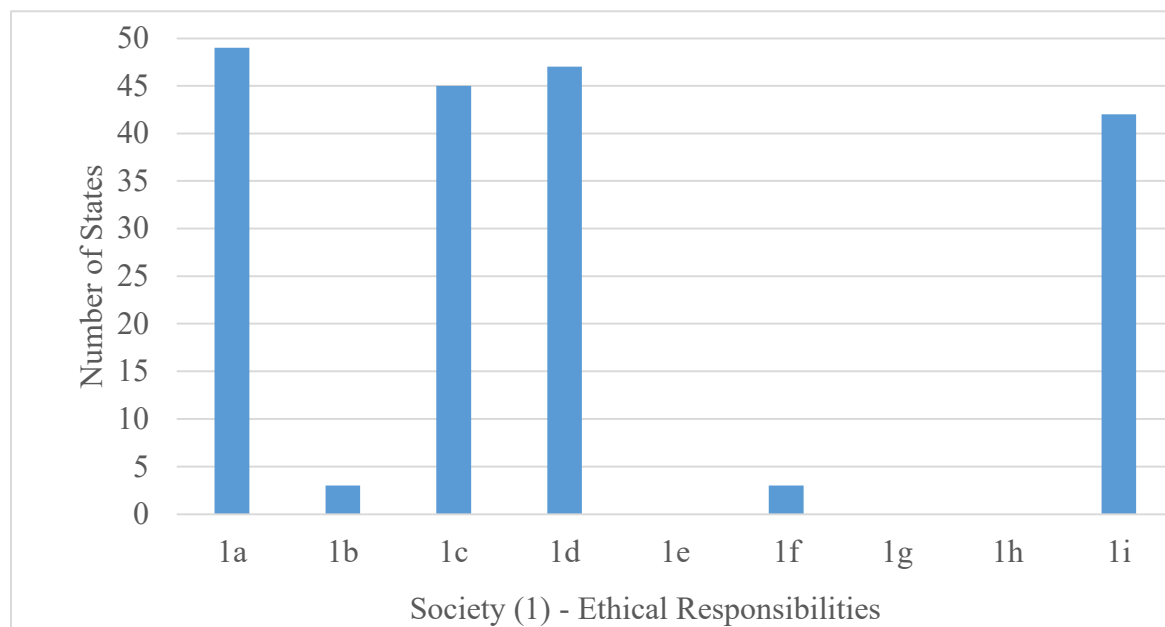


Figure 1. ASCE COE Stakeholder 1 Ethical Responsibilities found in state licensure laws/rules

As depicted in Figure 2, the four ASCE COE stakeholder 2 (Natural and Built Environment) Ethical Responsibilities were not included in most state laws and rules. Ethical responsibility 2d is included in two states, and the other three are included in one or none of the states. This stakeholder is the least referenced stakeholder throughout all licensure laws and rules.

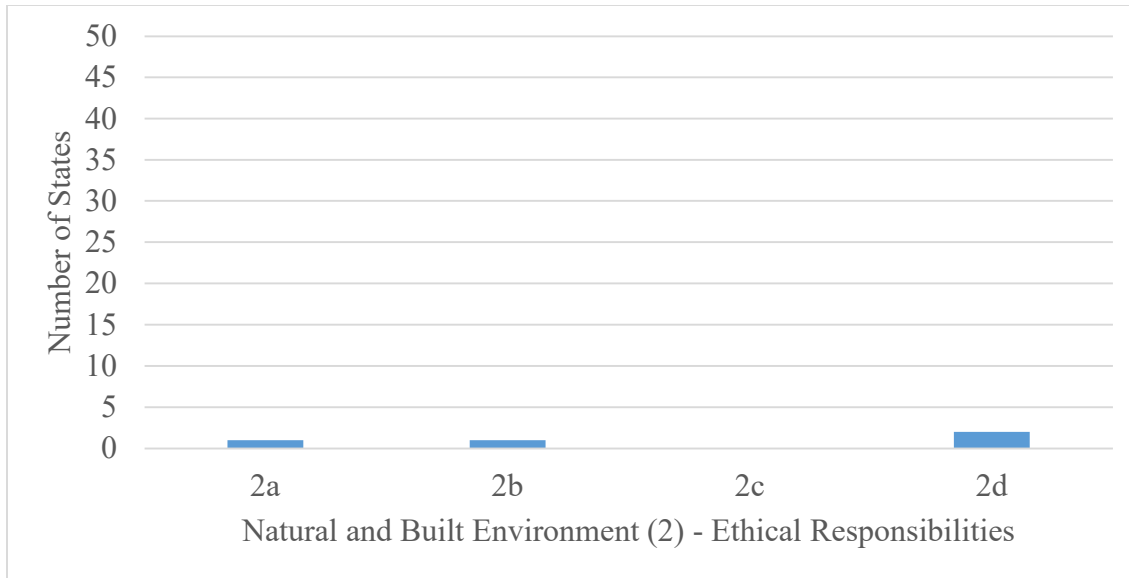


Figure 2. ASCE COE Stakeholder 2 Ethical Responsibilities found in state licensure laws/rules

In Figure 3, three of the seven ASCE COE ethical responsibilities for stakeholder 3 (Profession) are included in the majority of state laws and rules. Ethical responsibilities 3b, 3c and 3g are included in at least 39 states and are predominant in this category. The remaining four ethical responsibilities are found in fifteen or fewer state licensure laws and rules.

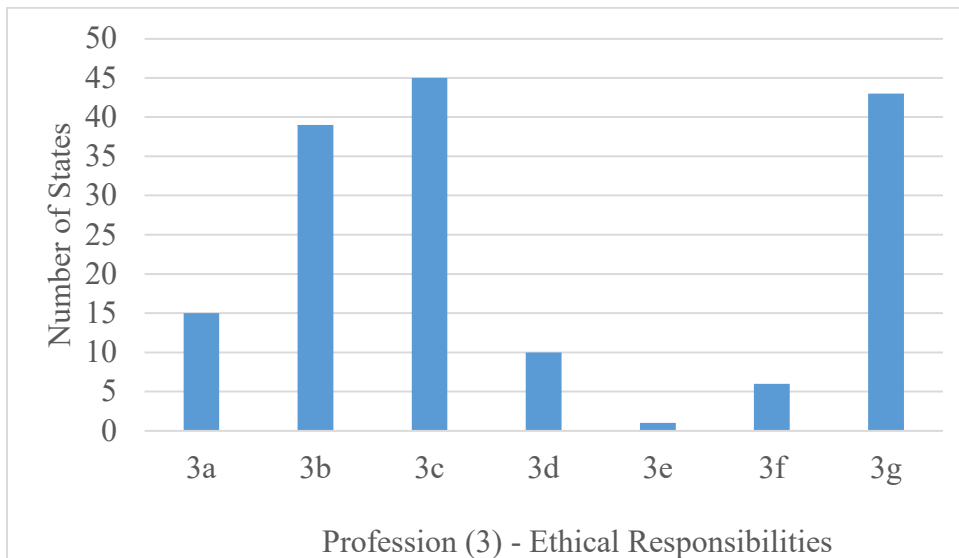


Figure 3. ASCE COE Stakeholder 3 Ethical Responsibilities found in state licensure laws/rules

Figure 4 reveals that many state licensure laws and rules include ASCE COE Ethical Responsibilities for stakeholder 4 (Clients and Employers). Four of the seven ethical responsibilities were found in 39 or more state licensure laws or rules, 4g was included in all 50 states, and 4f was included in 49 states. Of the remaining ethical responsibilities, 4e is included in half of the states and 4a was found in 15 states. Only 4c was largely excluded from any state licensure law or rule. There were more states that included stakeholder 4 responsibilities in their licensure law or rule than any other stakeholder.

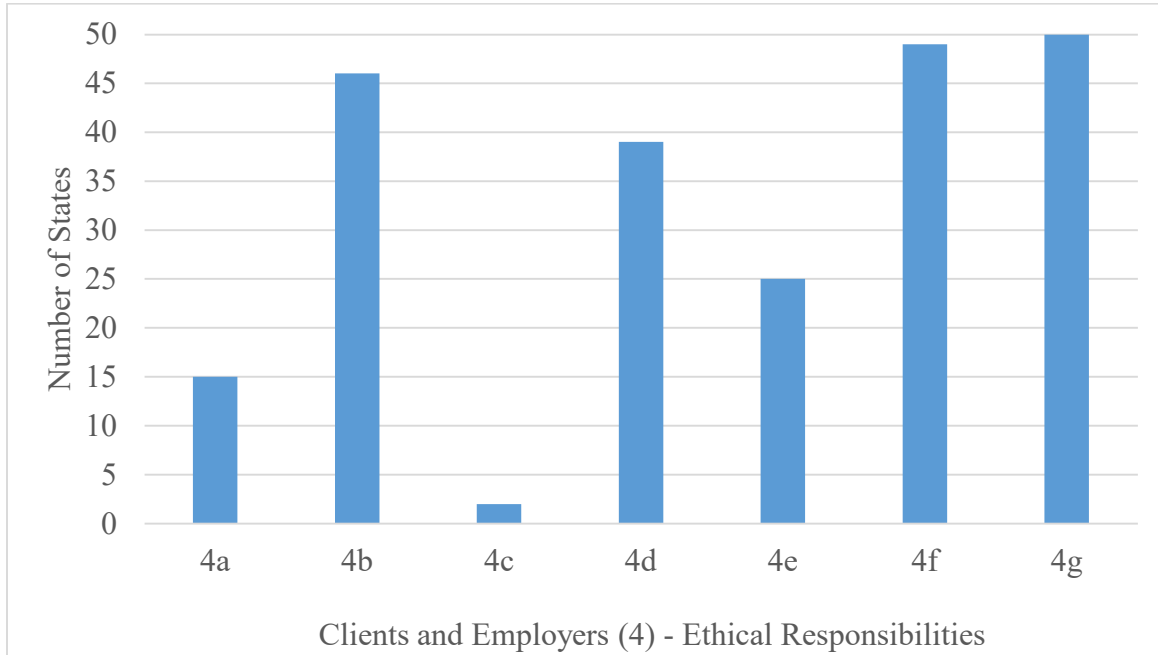


Figure 4. ASCE COE Stakeholder 4 Ethical Responsibilities found in state licensure laws/rules

As illustrated in Figure 5, there was only one ASCE COE Ethical Responsibility (5h) for the stakeholder 5 (Peers) that was found in the majority of state licensure laws and rules. Eight of the nine ethical responsibilities were included in twelve or fewer state laws and rules. Seven ethical responsibilities were included in six or fewer states. Overall, this stakeholder category was the second least represented in state licensure laws and rules.

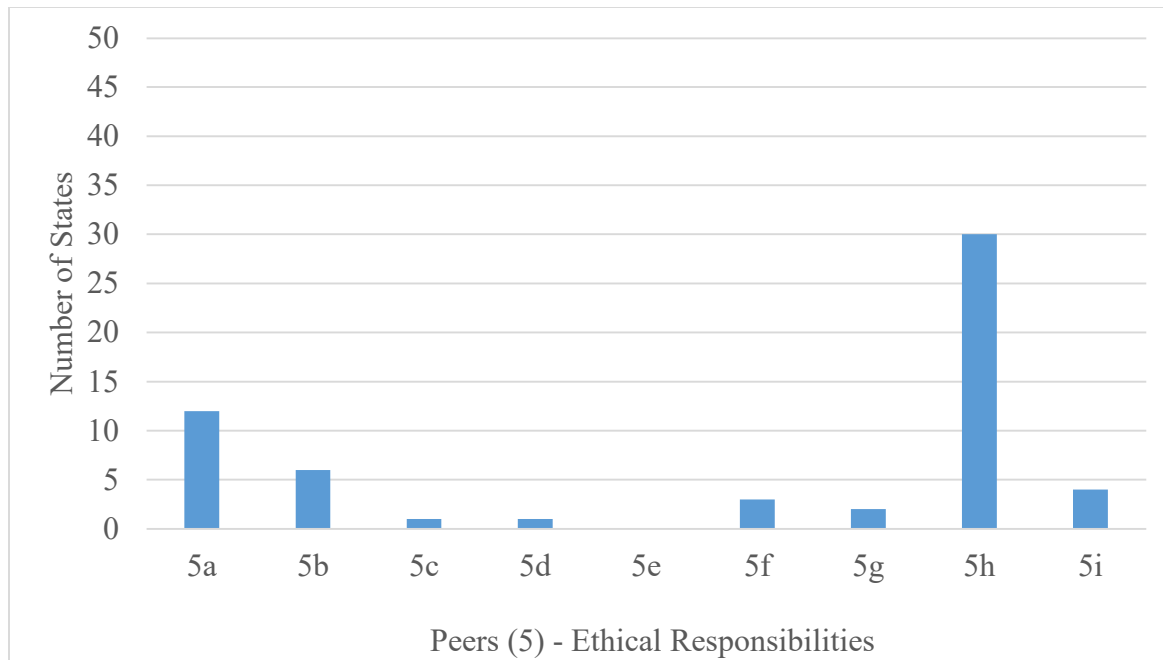


Figure 5. ASCE COE Stakeholder 5 Ethical Responsibilities found in state licensure laws/rules

Figure 1 through Figure 5 address the first two research questions. The ASCE COE Ethical Responsibilities and state licensure laws and rules of professional conduct requirements are not mutually exclusive, yet the amount of commonality is limited. Most ASCE COE Ethical Responsibilities are not widely adopted in state laws and rules. When viewing the entire ASCE COE, only 13 of 36 ethical responsibilities were found in most licensure laws and rules, six ethical responsibilities were found in a few (5 - 15) state licensure laws and rules, and seventeen ethical responsibilities were found in fewer than five state licensure laws and rules. Of those seventeen, five ethical responsibilities were not found in a single state law or rule.

The comparison of the NCEES Model Rules – Professional Conduct Provisions and the ASCE COE Ethical Responsibilities are shown in Table 2 [3]. Fourteen of the thirty-six ASCE COE Ethical Responsibilities are listed in the NCEES Model Rules. This compared closely with the number and category of ASCE COE Ethical Responsibilities found in state licensure laws and rules. The one exception was ASCE COE Responsibility 5a. It is included in the NCEES Model Rules, but was only found in twelve state licensure laws and rules.

Table 2 – Comparison of the ASCE COE Ethical Responsibilities and the NCEES Model Rules – Professional Conduct Provisions [3]

Ethical Responsibilities in the ASCE COE	Included in the NCEES Model Rules (Yes/No) Included in State Licensure Laws and Rules (# of states)	Total Ethical Responsibilities from NCEES Model Rules Included in Each Stakeholder Category
1a	Yes (49)	4
1b	No (3)	
1c	Yes (45)	
1d	Yes (47)	
1e	No (0)	
1f	No (3)	
1g	No (0)	
1h	No (0)	
1i	Yes (42)	
2a	No (1)	0
2b	No (1)	
2c	No (0)	
2d	No (2)	
3a	No (15)	3
3b	Yes (39)	
3c	Yes (45)	
3d	No (10)	
3e	No (1)	
3f	No (6)	
3g	Yes (43)	
4a	No (15)	5
4b	Yes (46)	
4c	No (2)	
4d	Yes (39)	
4e	Yes (25)	
4f	Yes (49)	
4g	Yes (50)	
5a	Yes (12)	2
5b	No (6)	
5c	No (1)	
5d	No (1)	
5e	No (0)	
5f	No (3)	
5g	No (2)	
5h	Yes (30)	
5i	No (4)	
Total Number Included	14	14

To address the third research question, the number of professional conduct requirements found in state licensure laws and rules that were not included in the ASCE COE was tabulated. The study identified 36 additional professional conduct requirements in this category. These professional conduct requirements are summarized in Tables 3 and 4. Seven of the thirty-six professional conduct responsibilities were found in a majority of state licensure laws and rules as shown in Table 3. The remaining 29 professional conduct responsibilities were found in less than half of the states, although four were found in 20 or more state laws or rules (Table 4). Fourteen were found in five or fewer state laws and rules.

Table 3 – Common professional conduct responsibilities found in a majority of state licensure laws and rules, but not in the ASCE COE

#	Professional Conduct Responsibility	Number of States / Included in NCEES Model Rules (Yes/No)
1	Engineers cannot receive payment from 2 or more parties for the same work	44 (Yes)
2	Engineers cannot receive/solicit compensation from material or equipment suppliers	44 (Yes)
3	Engineers shall be truthful in all reports, statements, and testimony	38 (Yes)
4	Engineers must comply with political contribution restrictions-an engineer cannot make a gift to secure work	33 (Yes)
5	Engineers in public service cannot review submittals from organizations of which they are employed or are a member	29 (Yes)
6	Engineers cannot solicit contracts from government agencies or organizations if a principal or officer in their firm is a member	28 (Yes)
7	Engineers convicted of a felony that is related to the ability to practice engineering lose their license and unlicensed engineers are prohibited from obtaining a license to practice engineering	27 (Yes)

Table 4 – Additional ethical responsibilities in some state licensures laws and rules, but not in the ASCE COE

#	Professional Conduct Responsibility	Number of States / Included in NCEES Model Rules (Yes/No)
8	Advertising restrictions for engineers	24 (No)
9	Expert witness testimony shall be based on knowledge of facts, technical competence, and honest conviction	21 (Yes)
10	An engineer may not make a materially false statement or deliberately fail to disclose a material fact	21 (Yes)
11	Engineers cannot receive/solicit compensation from contractors	20 (Yes)
12	Engineers shall disclose financial interests in a company providing goods or services to a project	19 (Yes)
13	Engineers shall not issue statements or criticisms of public policy inspired or paid for by other parties without full disclosure	17 (Yes)
14	Law/rules define negligence, gross negligence and incompetence	16 (No)
15	Habitual intoxication or addiction to the use of drugs and alcohol which affects ability to practice engineering are grounds for licenses engineers to lose their license	16 (Yes)
16	Engineers cannot accept a professional commission on a contingency basis	14 (No)
17	Engineers are forbidden from practicing when medically or psychologically unfit to do so	11 (No)
18	Defines "Engineer of Record" Responsibilities	10 (No)
19	Engineers shall not seal any documents outside the licensee's field of practice	8 (No)
20	Engineers shall approve and seal only those design documents that conform to accepted engineering standards	8 (No)
21	Competitive bidding prohibited on public projects	6 (No)
22	Receives Aid or Cheats on the FE or PE Exam - Barred from completing the exam or given a passing grade.	6 (No)
23	A licensee is required to maintain for at least 6 years of all preliminary and final plans, documents, computations, and records of sealed docs	5 (No)
24	Engineers must disclose to principal employer when engaging in supplemental engineering work	4 (No)
25	Engineers who are convicted of a felony or any misdemeanor whose essential element is dishonesty directly related to the practice of engineering shall lose their license	4 (Yes)
26	Engineers may not make use of a client's property, facilities, or service without prior authority	3 (No)
27	Engineers may not review the work of another engineer for the same client without the engineer's knowledge, unless the engineer has been terminated	3 (No)
28	Engineers shall admit and accept their own errors and not distort facts to justify decisions	2 (No)
29	Engineers cannot use confidential information to make a profit without consent of the source of the information	2 (Yes)
30	Engineers are required to report in writing unauthorized substantial disregard by any contractor of plans or specifications for construction	1 (No)
31	Engineers are required to carry on professional work with loyalty to country and shall be devoted to high ideals of courtesy and personal honor	1 (No)
32	Engineers may not make use of any government property or facilities for private use	1 (No)
33	A written contract is required for each client	1 (No)
34	Engineers must advise clients or employers when they believe a project will not be successful	1 (No)
35	Designs supplied by a client remain the property of the client and should not be duplicated without permission	1 (No)
36	Engineers shall not make political contributions in excess of legal limits	1 (No)

Discussion of Results

Only 13 of the 36 (36%) ASCE COE Ethical Responsibilities are included in most state licensure laws and rules. Further, less than half of the ASCE COE Ethical Responsibilities for four of the stakeholder categories - society (1), the natural and built environment (2), the profession (3), and peers (5) - are found in a majority of state licensure laws and rules. The ASCE COE lists clients and employers (4) as the stakeholder having the fourth lowest priority, yet the majority of the ethical responsibilities associated with this stakeholder (four of the seven) are found in most state licensure laws and rules. Two stakeholders, society (1) and clients and employers (4), each had three ethical responsibilities included in at least 90% of the state laws and rules. Three ethical responsibilities were included in at least 98% of the states: 1a – Protect the health, safety, and welfare of the public, 4f – Perform services only in areas of competence, and 4g – Approve, sign, or seal only work under their responsible charge. When compared to the ASCE COE, the results indicate state licensure laws and rules are typically focused on engineers' obligation to protect society, clients, and employers (stakeholders 1 and 4). These two stakeholders tend to have the highest priority in state licensure laws as compared to their priority ranking in the ASCE COE.

The ASCE COE Ethical Responsibilities to the profession (3) were the third most referenced in state licensure laws and rules. Over 78% of the state laws and rules included three ethical responsibilities: 3b, 3c, and 3g. These responsibilities pertain to licensed engineers practicing in accordance with all legal requirements, representing professional qualifications truthfully, and meeting professional development obligations. This could be viewed as the third ranked ethical responsibility based on inclusion in state laws and rules. It is important to note that state licensure laws and rules prioritize an engineer's duty to comply with state licensure laws (3b) alongside protecting public safety and welfare (stakeholder 1). This is in contrast to ASCE COE prioritizing ethical responsibility 3b below society and the natural and built environment.

The two ASCE COE stakeholders that are mentioned least often are the natural and built environment (2) and peers (5). In fact, none of the stakeholder 2 ethical responsibilities are included in more than 2 states (4%). The stakeholder 5 ethical responsibilities are found in less than 25% of state laws and rules except for ethical responsibility 5h (only comment on other professionals and their work in a professional manner). In general, states craft their licensure laws and rules with little to no mention of stakeholders 2 and 5. These could be viewed as the third tier if ASCE COE stakeholders were ranked based on inclusion in state licensure laws and rules. A further differentiation of this category reveals stakeholder 2 is the lowest ranked of all stakeholders based on a lack of ethical responsibilities represented in state laws and rules. Although ASCE prioritizes this stakeholder second in its hierarchy, licensed engineers do not have a legal obligation to this stakeholder.

The 13 ethical responsibilities from the ASCE COE that are found in most state licensure laws and codes are also found in the NCEES Model Rules. Only one professional conduct requirement in the NCEES Model Rules is not found in the majority of state licensure laws and rules and is in the ASCE COE; that is 5a – only take credit for personal work. It is evident that state licensure laws and rules include many professional responsibilities from the NCEES Model Rules.

EAC-ABET civil engineering programs are tasked with meeting the EAC-ABET CEPC requirements and the EAC-ABET criterion 5 requirement to prepare graduates for the practice of engineering. This could be interpreted to mean civil engineering curriculums are obligated to ensure that graduates are knowledgeable of the legal definition of the “practice of engineering” and the professional conduct requirements in the state where the civil engineering program is located. This is different than being knowledgeable of a code of ethics. CE students that are able to apply the ASCE Code of Ethics to an ethical dilemma will be exposed to at most 13 professional conduct requirements in most state licensure laws and rules. When making these comparisons it is important for civil engineering students to understand that ethical responsibilities, while important, are voluntary responsibilities. They are not legal obligations. Licensed professional engineers are bound by state laws and rules to carry out their professional responsibilities. It is also important to note that stakeholders are not ranked in state licensure laws and rules, with the exception that licensure laws and rules are primarily intended to protect public safety. When considering how many ASCE COE Ethical Responsibilities are most often included in laws and rules, stakeholders society (1) and clients and employees (4) are the focus.

An additional contrast between the ASCE COE and state laws and rules involves ethical responsibility 3b (practice engineering in compliance with all legal requirements). Thirty-six state licensure laws specifically state that licensed engineers are required to have knowledge of all licensure laws and rules that govern the practice of engineering to protect public safety and welfare. In contrast, the ASCE COE lists responsibility 3b as an obligation to Stakeholder 3 (the profession) rather than Stakeholder 1 (society). The ASCE COE further states that “In the case of a conflict between ethical responsibilities, the five stakeholders are listed in the order of priority.” This statement places ASCE COE Ethical Responsibility 3b below the “Natural and Built Environment” stakeholder ethical responsibilities, yet these responsibilities are found in virtually none of the state licensure laws or rules. Civil engineers that prioritize responsibilities to the Natural and Built Environment (2) over complying with “all legal requirements in the jurisdiction of practice” risk violating laws that are intended to protect public safety.

The study found that 98% of state licensure laws and rules have a specific section focused on rules of professional conduct, and many had very detailed lists. Every state has professional conduct requirements that are not listed in the ASCE COE. The number and diversity of these professional conduct requirements is staggering. Seven of these thirty-six professional conduct requirements are common to a majority of state licensure laws and each of them is found in the NCEES Model Rules.

The remaining professional conduct responsibilities in Table 4 are found in state licensure laws and rules, yet many are also found in the NCEES Model Rules. It is important to note that six of the eight most common professional conduct requirements are listed in the NCEES Model Rules. However, Table 4 also demonstrates that states do not take the NCEES Model Rules carte blanche.

What is also seen in Table 4 is that states wield their power to insert explicit requirements into their licensure laws and rules based on politics, business practices, and culture. Specific instances include: item 31 - concerning conducting professional work with loyalty to country,

item 36 - making political contributions within legal limits, and item - 22 cheating on licensure exams. Many of these professional conduct requirements may be linked to general ASCE COE Ethical Responsibilities, but they are much more specific and practical in nature.

In summary, the first research question asked if the ASCE COE Ethical Responsibilities and state licensure professional conduct code requirements are mutually exclusive. While there are some similarities, the majority of ASCE COE Ethical Responsibilities are not found in state licensure professional conduct codes. In addition, seven of the thirty-six professional conduct responsibilities that are not in the ASCE COE are common in a majority of state licensure laws. The typical state licensure laws and rules only share about one third of the ASCE COE content.

The second research question asked if there are specific ASCE COE Ethical Responsibilities not included in state licensure laws professional conduct codes. The results reveal that seventeen of the ASCE COE Ethical Responsibilities are found in fewer than five state laws and rules. Five were not found in a single state. This reveals that about half of the ASCE COE Ethical Responsibilities are essentially not found in any professional conduct requirements.

The last research question asked if state licensure professional conduct codes include requirements that are not found in the ASCE COE list of responsibilities. Thirty-Six unique professional conduct requirements were found, and seven were included in the majority of state laws and rules. Every state had numerous additions and some had over a dozen.

Conclusions

The comparative study reviewed the ASCE COE Ethical Responsibilities, the NCEES Model Rules, and the Professional Conduct Requirements in all 50 state licensure laws and rules. The study revealed the following:

- 1) There are thirteen ASCE COE Ethical Responsibilities found in the majority of state licensure laws and rules.
- 2) Fourteen of the ASCE COE Ethical Responsibilities are found in the NCEES Model Rules.
- 3) The thirteen ethical responsibilities shared by the ASCE COE and most state licensure laws and rules are found in the NCEES Model Law. Only one ethical responsibility is found in the NCEES Model Law and ASCE COE that is not in the majority of states. This demonstrates that the NCEES Model Law is a significant influencer on state licensure.
- 4) The three most important ASCE COE stakeholders in state licensure laws and rules are society, the profession, and clients and employers. State licensure laws and rules exist to protect public safety. The ASCE COE responsibility to “practice engineering in compliance with all legal requirements” is a legal obligation to protect public safety in state licensure laws and rules.
- 5) There are two ASCE COE stakeholders, natural and built environment and peers, that are not mentioned in most state licensure laws and rules.
- 6) Only presenting the ASCE COE requirements to students fails to include several legally required professional conduct topics found in most state licensure laws and rules.

Graduates who prioritize ASCE COE responsibility 3b below stakeholder 1 and stakeholder 2 responsibilities risk violating state licensure laws and protecting public safety in a majority of states.

- 7) Inserting the ASCE COE into the EAC-ABET CEPC will provide civil engineering students with a general ethical overview, but will omit many important professional conduct requirements that licensed engineers are legally obligated to obey.
- 8) Civil engineering programs should consider using the NCEES Model Rules to comply with EAC-ABET Criterion 5 to prepare students for the “practice of engineering.” The NCEES Model Rules cover the most common professional conduct requirements in state licensure laws and rules and covers a significant portion of the ASCE COE.
- 9) Civil engineering programs that include ASCE COE instruction in their curriculums should consider adding the professional conduct requirements from their state licensure laws and rules. This will provide civil engineering students with comprehensive knowledge of legal requirements. However, including only professional conduct requirements from a single state’s licensure laws and rules will deprive students of the knowledge needed to practice engineering in a different state upon graduation.

The 2021-2022 EAC-ABET CEPC currently requires civil engineering curriculums to prepare graduates... *to analyze issues in professional ethics and explain the importance of professional licensure.* The proposed changes to the CEPC broaden the curriculum requirements to include topics necessary... *to apply the ASCE Code of Ethics to an ethical dilemma.* Only thirteen of the thirty-six ethical responsibilities in the ASCE COE are included in most professional conduct requirements in state licensure laws and rules. Only fourteen of the thirty-six ethical responsibilities in the ASCE COE are included in NCEES Model Rules. Specifying that EAC-ABET civil engineering programs must focus on the ASCE Code of Ethics limits, rather than broadens, student exposure to professional responsibilities of civil engineers. The study supports a recommendation to modify the proposed CEPC language to “apply professional ethics to an ethical dilemma” and provide civil engineering programs with the discretion to meet this requirement.

The proposed changes to the CEPC include topics necessary to...*explain the professional attitudes and responsibilities of a civil engineer, including licensure and safety.* This change redirects the current focus on licensure and adds the requirement to explain the responsibilities of a civil engineer. This proposed change dilutes civil engineering program responsibility to ensure that graduates are knowledgeable of professional conduct requirements in the state where the civil engineering program is located. ASCE should consider modifying the proposed CEPC change to require civil engineering curriculums “ensure that graduates are knowledgeable of state licensure laws and professional conduct requirements.”

EAC-ABET Criterion 5 requires civil engineering curriculums to prepare graduates for the “practice of engineering.” Most state licensure laws and rules define this term which includes a duty to know, understand, and comply with professional conduct requirements. The study reveals that civil engineering curriculums that do not include knowledge of key professional conduct topics found in most state licensure laws and rules risk not complying with EAC-ABET criteria.

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