

# ICEAA Certification Program Overview



Kevin Cincotta, Certification Principal  
ICEAA Professional Development & Training Workshop  
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# CCEA<sup>®</sup>, PCEA<sup>®</sup>, and SCEC Certifications

**CCEA<sup>®</sup>**  
ICEAA's Primary Professional Certification  
Valid for five years  
Renewable Through Points System  
Requires Passing Parts I & II of the Exam

**PCEA<sup>®</sup>**  
ICEAA's Apprentice-Level Certification  
Valid for three years  
Requires Passing Part I of the Exam  
Renewable by Exam Re-Take Only

**SCEC**  
Software Cost Estimator Certification  
Demonstrates mastery of software estimation  
Valid for five years  
Renewable by Points System

- Provide professional credentials that set the standard for the entire cost estimating and analysis community
- Offer employers and individuals a means of distinguishing and achieving excellence. Certification serves as a measure of an individual's mastery of the basic and intermediate knowledge in cost estimating and analysis
- Strengthen the individual's and their organization's ability to produce quality cost estimates and analyses

# Example Topics & Modules (PCEA/CCEA: 16; SCEC: 9)

**PCEA<sup>®</sup>**

ICEAA's Apprentice-Level Certification  
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**CCEA<sup>®</sup>**

ICEAA's Primary Professional Certification  
Valid for five years  
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**SCEC**

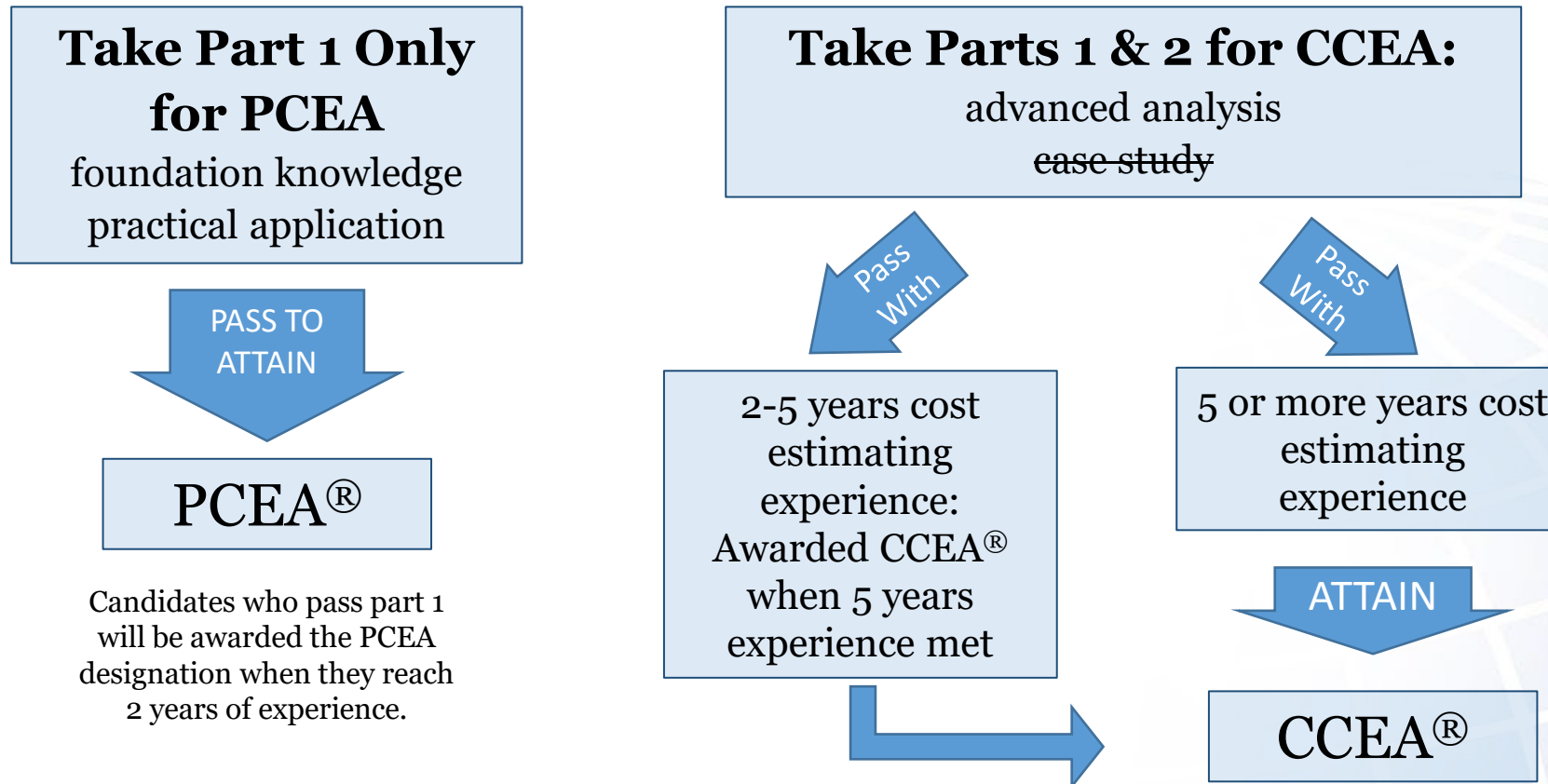
Software Cost Estimator Certification  
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- Cost Estimating Basics
- Cost Estimating Techniques
- Work Breakdown Structures/Cost Element Structures
- Inflation, Indices, Escalation, Appropriations, and Outlays
- Technical Baseline Documents
- Contract Pricing/Cost Estimating to Support Source Selection
- Data Collection, Normalization/Analysis, and Visualization
- Probability and Statistics
- Regression and Cost Estimating Relationship (CER) Development
- Risk and Uncertainty Analysis
- Learning Curves

**ICEAA** International Cost Estimating  
and Analysis Association

- Software Development Paradigms (e.g., Agile)
- Five-Step Estimating Process
- Estimating Cost & Schedule for Developed SW
- Software Sustainment
- Procured Software & ERPs
- Software Size as a Cost Driver
- Estimating Software Development Productivity
- Using Commercial Estimating Models

# CCEA/PCEA Certification Exam: Two Parts



To be awarded CCEA, candidates must pass both parts of the exam and have a college degree and 5 years of cost estimating (or related) experience.

# SCEC Certification Exam

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## Take SCEC Exam

foundation knowledge  
of software cost estimating  
**(requires college degree and 2  
years of relevant cost-related  
experience)**

PASS TO  
ATTAIN

SCEC

# Certification Application

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- Complete the application at [www.iceaaonline.com/application](http://www.iceaaonline.com/application)
- Wait for approval from ICEAA
- Log in to pay your exam fee [www.iceaaonline.com/login](http://www.iceaaonline.com/login)

\*If you prefer to manually take the exam with a live proctor, you may request it and incur a 20% surcharge to cover printing, shipping, and other coordination.

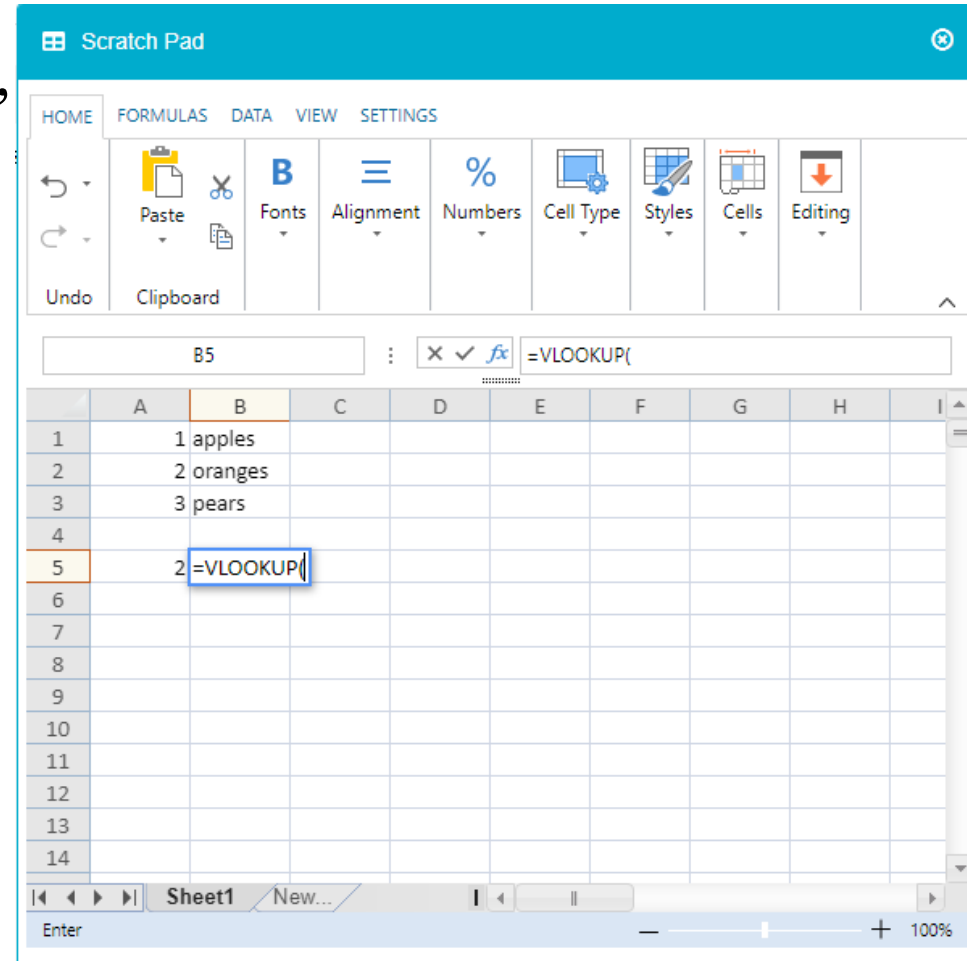
# Online Exam System Check

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- Ensure your desktop or laptop meets the requirements of the online exam:
  - Integrated camera and microphone.
  - The latest version of Google Chrome or Mozilla Firefox. A browser extension download may be required when pre-test system check is performed.
- System check links will be provided approx. two weeks prior. Test your system as soon as the links are received.
- The same link will be used for your exam. If you are not ready to take it immediately after the pre-check, close the browser and log back on when you are ready. Once started, the exam cannot be paused or restarted.

# Online Exam Excel “Scratchpad”

- The system includes a built-in Excel “Scratchpad”
- Supports every **built-in** Excel function
- Only “scientific calculator” (basic arithmetic, exponents, and logs) functions are needed to complete the exam
- “Practice” session with Scratchpad before test encouraged



# Online Exam AI Proctor

- The exam software uses advanced analytics for AI proctoring.
- The software will flag incidents such as an additional person present, looking away from the screen for long periods of time or if additional devices are detected. ICEAA manually reviews all flags.
- Close all other programs and browsers or browser tabs.
- If you open any other programs or browser windows/tabs during the exam, you will be locked out and will have re-apply and pay to take a repeat exam.



# The Question Bank & Randomization

- Based on legacy (paper-based) PCEA & CCEA exams, original question-writing, and crowd-sourced questions (which earn one re-certification point each)
- SCEC exam questions were largely drafted by the CEBoK-S content contributors and reviewers.
- Air Force Institute of Technology (AFIT) students are largest non-ICEAA contributors
- Distribution of questions approximately **uniform** across CEBoK modules
- 100% of questions covered in CEBoK (some in Speaker Notes only, 1-2 in Advanced Topics only)
- Each question bank has at least 50% more questions than given on each exam (PCEA 60/90; CCEA 50/75, SCEC 50/85)
- Order of questions and order of choices within a question are both random
- Each question is multiple choice, with exactly one correct answer; no guessing penalty; case study eliminated
- Exam-takers may object to questions, show work, argue their case, submit proposed corrections, etc. via a post-exam survey. The Certification Principal reads all feedback. To date, **two (2)** students have received additional credit based on what they wrote. **Zero (0)** students have changed a failing mark to a passing one (or vice versa)
- After you pass the exam(s), submit your proposed questions to [iceaa@iceaaonline.org](mailto:iceaa@iceaaonline.org)

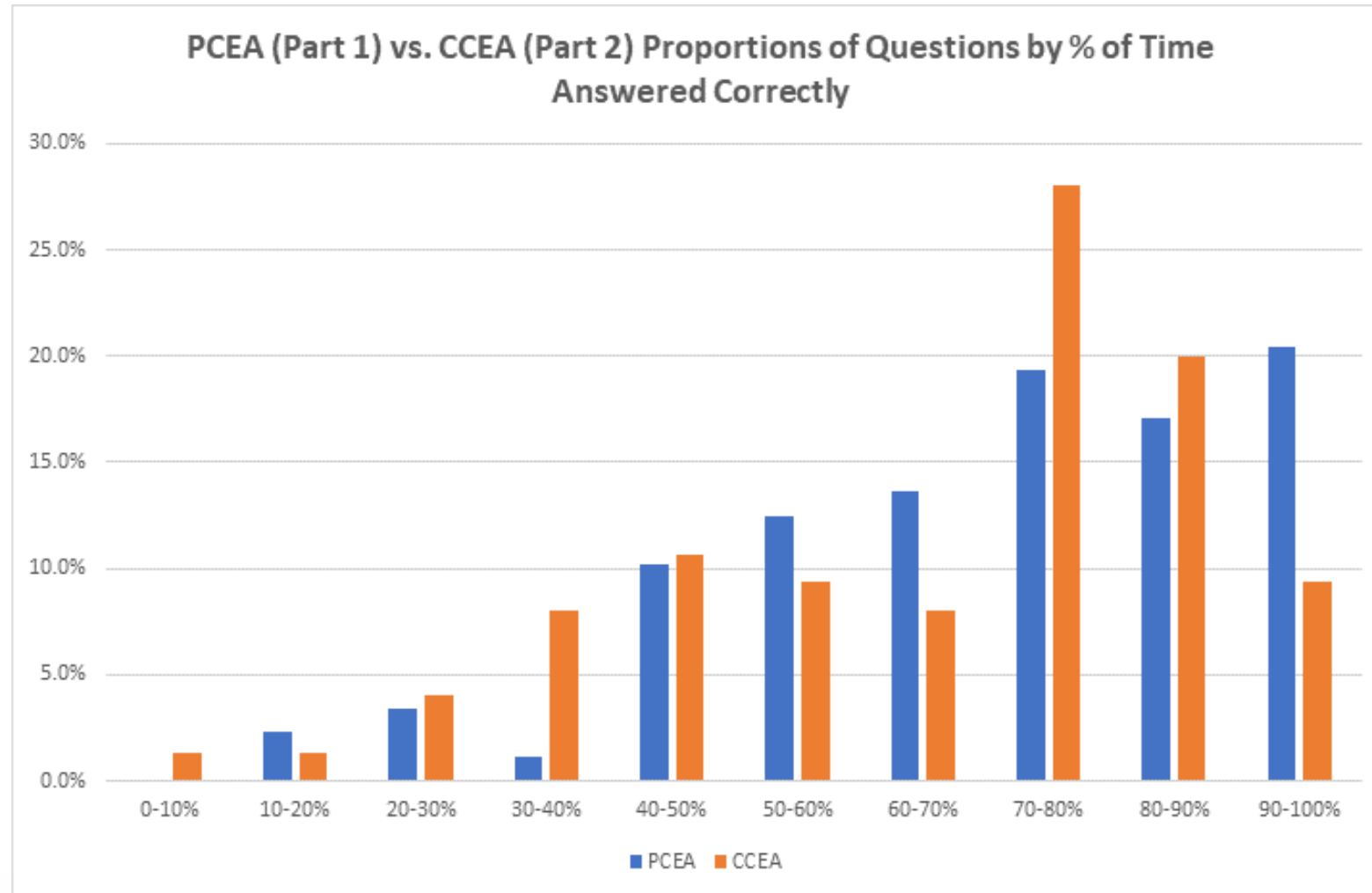
# Comparing The Exams (1/2)

Exam & Time Allotted	Number of Questions & Question Bank	General Nature of Questions	Pass Rate%	Median Score (70% Required to Pass)	Cronbach's Alpha & Number of "Poor" Questions
PCEA (2 hours)	60, 88	Conceptual, single-step	56.3% <sup>1</sup>	71.7%	41.6% (1/90)
CCEA (2 hours)	50, 75	Abstracted, multi-step	42.6% <sup>2</sup>	66.0%	31.6% (2/75)
SCEC (1.5 hours) <sup>1</sup>	50, 113	Mostly terminology	88.2% <sup>3</sup>	85.0%	-

**Cronbach's alpha** is a measure of exam performance on a scale of 0% to 100% (higher is better), based on **internal consistency**. It is based on the correlation of performance on each question to performance on the overall exam. A "poor" question is one with a **negative** correlation (high-performers get it wrong; low-performers get it right).

1. In 2024, the PCEA pass rate was 62%, with 78% of all exam-takers ultimately passing.
2. In 2024, the CCEA pass rate was 48%, with 72% of all exam-takers ultimately passing.
3. This represents the actual SCEC exam. There was a 100% pass rate on the "alpha" version.

# Comparing The Exams (2/2)



# CEBoK® v2.0



- A collection of PowerPoint, Excel, and PDF files
- Available for purchase (and download) online at <https://members.iceaaonline.com/store>
- Complete CEBoK- S: \$595 members / \$745 non-members
- Per lesson - \$100 / \$175



- Browser-based Wikipedia-style website
- Free for current ICEAA members when logged in at ICEAA Portal
- ICEAA membership: \$150/year

# CEBoK Testable Topics

- Located at the bottom of each main CEBoK Wiki page
- Example (from *Cost Estimating Basics* module):

wikidev.iceaaonline.com/wiki/Cost\_Estimating\_Basics

that the final product should provide sufficient information on how the estimate was developed so that other analysts could reproduce the estimate.

When developing the cost estimate results and report, the level of detail required depends on the audience and estimate effort. The report must be:

- crisp and complete;
- easily and quickly comprehended by audiences unfamiliar with the estimate;
- thorough enough to address the important details of the estimate; and
- demonstrative of the competence that underlies the estimate results.

In proposals, analysts should develop an executive volume to accompany the cost volume which summarizes the technical aspects of the program in simple terms since many of the cost analysts evaluating the proposal may have had no exposure to the technical or management executive summary. If cost analysts and auditors have a better understanding of the system, they can more easily follow the rationale and estimating methodology.

Briefing charts show the results of the estimate. The detail of the charts depends on the level of the decision maker being briefed.

At this stage, we can conduct other analyses and incorporate them into the final cost estimate, including CAIV, sensitivity, and risk analyses.

CAIV entails setting aggressive yet realistic cost objectives when defining operational requirements and acquiring systems and managing achievement of these objectives. Essentially, a program is made up of three parameters: schedule, performance, and cost adjusted for risks present in all three parameters. In a simplistic view, two of these variables must depend on the third. CAIV makes performance and schedules a function of available resources, namely cost. CAIV will be covered in greater detail in [Module 16 Cost Management](#).

**Sensitivity analysis** assesses the cost of changing significant input parameters. Sensitivity analysis identifies key assumptions and variables within the estimate and determines how changing them effects costs. Its value lies in the additional information and understanding it brings to bear on the decision. For decision makers facing an investment decision, sensitivity analysis helps determine how changes in costs or benefits (e.g., due to forecast errors) affect the estimate.

**Risk analysis** normally increases the cost estimate. The impact of risk is added to the initial point estimate resulting in a range or distribution of costs. Today's systems possess increasing technical complexity. This increased technical risk increases the risk of schedule delays and cost overruns. Other areas of risk and uncertainty to explore after developing a cost estimate include pending negotiations, schedule risk, uncertain performance requirements, appropriateness of analogies, level of knowledge about support concepts, and critical assumptions. This is discussed in further detail in [Module 9 Cost Risk Analysis](#).

After following the cost estimating process and applying the appropriate tools and techniques, the analyst has produced a defensible cost estimate that management can use for decision making.

### Summary

Rigorous and systematic estimating of a program or system leads to a better understanding of the problem. It improves management insight into the allocation of resources. Future uncertainty means even the best estimate will differ from reality. Nonetheless, a high-quality cost estimate is an invaluable aid in decisions about resource allocation.

The quality and accuracy of an estimate is dependent on the expertise of the estimator. Analysts must understand all underlying complexity, technology, and programmatic trends as well as the audience of the new estimate.

Remember to consider the estimate in its entirety. Avoid leaving out or double-counting components and do not forget about integration costs.

Develop the estimate and documentation in sufficient detail so as to be easily reproducible. The estimator and all auditors must understand the estimating concepts and methods applied. [Module 2 Costing Techniques](#) further explores these estimating techniques.

### Testable Topics

Testable	Testable, but less emphasized	Not Testable
<ul style="list-style-type: none"> <li>▪ Motivations for Cost Estimating</li> <li>▪ Applications of Cost Estimating</li> <li>▪ Benefits of Cost Estimating</li> <li>▪ Characteristics of High-Quality Cost Estimates</li> <li>▪ Limitations of Cost Estimating</li> <li>▪ Cost Estimating Challenges</li> <li>▪ Types of Cost Estimates</li> <li>▪ Elements of a Cost Estimate</li> <li>▪ Cost Estimating Process</li> <li>▪ Work Breakdown Structure/Cost Element Structure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cost Products (Technical Baseline)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cost Estimating Organizations</li> <li>▪ Cost Estimating in the Budget Process</li> <li>▪ Cost Estimating the Acquisition Process</li> <li>▪ Cost Estimating Disciplines</li> <li>▪ Personality Traits of Cost Estimators</li> <li>▪ Resources (Regulatory, Agencies, etc.)</li> <li>▪ Advanced Topics</li> </ul>

# Predictors of Exam Success

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- Taken exam previously
- 3-20 years of experience
- Experience supporting US national security-related agencies (e.g., DoD, DHS)
- CEBoK study
- Participation in an employer-sponsored study group
- Experience teaching one or modules or submitting exam questions

# Other Notes

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- Exams favor breadth over depth
- They “even out” experience. You will almost certainly find questions on an area in which you have little or no professional experience
- Quantitative and deductive skills are at a premium, especially on CCEA, but no advanced math is required
- There are no “trick questions.” These have long ago been “vetted out.”
- The great majority of protests about exam questions involve questions come from passing students, and relate to questions that the exam-taker **got right**

# More certification questions?

[www.iceaaonline.com/certificationfaq](http://www.iceaaonline.com/certificationfaq)



The screenshot shows a web browser window with the URL [www.iceaaonline.com/certificationfaq/](http://www.iceaaonline.com/certificationfaq/). The page features the ICEAA logo at the top, followed by the heading "Certification FAQ". A prominent banner for PCEA, CCEA, and SOEC certifications is displayed, stating that exams are online and can be taken from a browser. Below this, the text explains that ICEAA offers PCEA and CCEA certifications, detailing the requirements for each. On the right side of the page, there are two video thumbnails: "What is Cost Estimating?" and "Who We Are: How Did You Find Your Cost Career?". At the bottom right, there is a section for "Upcoming Events" which currently shows "There are no upcoming events."

# Contact Information

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[www.iceaaonline.com/certification](http://www.iceaaonline.com/certification)

[www.iceaaonline.com/cebok](http://www.iceaaonline.com/cebok)

[iceaa@iceaaonline.org](mailto:iceaa@iceaaonline.org)

4115 Annandale Road, Suite 306  
Annandale, VA 22003