CERTNEXUS®

Certified Ethical Emerging Technologist™ (CET-110) Exam Blueprint

CEET

Introduction to CertNexus

CertNexus is a vendor-neutral certification body, providing emerging technology certifications and micro-credentials for business, data, developer, IT, and security professionals. CertNexus' mission is to assist closing the emerging tech global skills gap while providing individuals with a path towards rewarding careers in Cybersecurity, Data Science, Data Ethics, Internet of Things, and Artificial Intelligence (AI)/ Machine Learning (ML).

We rely on our Subject Matters Experts (SMEs) to provide their industry expertise and help us develop these credentials by participating in a Job Task Analysis, Exam Item Development, and determining the Cut Score. We also depend upon practitioners in the field to participate in a survey of the Job Task Analysis and beta testing to ensure that our certifications validate knowledge and skills relevant to the industry.

Acknowledgements

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Certified Ethical Emerging Technologist™ (CEET) Exam CET-110

Exam Information

The *Certified Ethical Emerging Technologist™ (CEET)* industry-validated certification helps professionals differentiate themselves from other job candidates by demonstrating their ability to ethically navigate emerging data-driven technologies such as AI, Machine Learning, and Data Science.

Organizations and governments are seeking out ethics professionals to minimize risk and guide their decision-making about the design of inclusive, responsible, and trusted technology. An algorithm not designed and assessed in alignment with ethical standards can create further inequity across race, gender, and marginalized populations. The reputational and financial impact of an ethics violation can devastate a company. Knowledgeable ethics leaders are needed who can navigate through the more than 160 frameworks and guidelines to select and implement the best strategy to promote fairness and minimize risk for their organization. This exam is designed for candidates seeking to create and lead initiatives that prioritize ethical integrity within emerging data-driven technology fields such as Artificial Intelligence and Data Science. Successful candidates will be prepared to bridge the gap between theory and practice.

Candidate Eligibility

The *Certified Ethical Emerging Technologist™ (CEET)* exam requires no application fee, supporting documentation, or other eligibility verification measures in order to take the exam. An exam voucher may come bundled with your training program, or can be purchased separately here or directly from Pearson VUE. Once purchased, you will receive more information about how to register for and schedule your exam. Once you have obtained your voucher information, you can register for an exam time here. By registering, you agree to our Candidate Agreement included here.

Exam Prerequisites

While there are no formal prerequisites to register for and schedule an exam, we strongly recommend you first possess the following knowledge, skills, and abilities:

- Demonstrate an understanding of the fundamental/foundational concepts related to ethics in data-driven technologies.
- Identify common ethical principles and frameworks and select the appropriate framework to understand and/or address ethical issues.
- Identify regulations, standards, and best practices utilized in the industry and identify the ethical challenges that may conflict with or compromise their implementation.
- Identify and mitigate the myriad risks that arise within the development, utilization, and/or implementation of data-driven technologies.
- Communicate about ethical risks and ethical practices internally within the organization and externally to relevant third parties.
- Create, implement, and evaluate ethical policies and governance regarding data-driven technology throughout the organization.

You can obtain this level of skill and knowledge by taking the following courseware, which is available through training providers around the world, or by attending an equivalent third-party training program:

- *Certified Ethical Emerging Technologist™ (CEET)*

Exam Specifications

Number of Items: 80

Passing Score: 62%

Duration: 120 minutes (**Note:** Published exam times include the 10 minutes you are allotted for reading and signing the Candidate Agreement and reviewing exam instructions.)

Exam Options: In person at Pearson VUE test centers or online via Pearson OnVUE online proctoring

Item Formats: Multiple Choice/Multiple Response

Exam Description

Target Candidate:
This certification exam is designed for individuals seeking to demonstrate a vendor neutral, cross-industry, and multidisciplinary understanding of applied technology ethics that will enable them to navigate the processes by which ethical integrity may be upheld within emerging data-driven technology fields (such as Artificial Intelligence (AI), Internet of Things (IoT), and Data Science).

Exam Objective Statement:
This exam will certify that the successful candidate has the knowledge, skills, and abilities required to apply foundational ethical principles, follow industry-standard frameworks, identify and mitigate risks, and navigate ethical organizational governance in order to devise and maintain ethical, trusted, and inclusive data-driven technologies.

To ensure exam candidates possess the aforementioned knowledge, skills, and abilities, the *Certified Ethical Emerging Technologist™ (CEET)* exam will test them on the following domains with the following weightings:

Domain	% of Examination
1.0 Fundamental Concepts for Data-Driven Technology Ethics	17%
2.0 Ethical Frameworks	23%
3.0 Risk Identification and Mitigation	30%
4.0 Communication	12%
5.0 Organizational Policy and Governance	18%
Total	**100%**

The information that follows is meant to help you prepare for your certification exam. This information does not represent an exhaustive list of all the concepts and skills that you may be tested on during your exam. The exam domains, identified previously and included in the objectives listing, represent the large content areas covered in the exam. The objectives within those domains represent the specific tasks associated with the job role(s) being tested. The information beyond the domains and objectives is meant to provide examples of the types of concepts, tools, skills, and abilities that relate to the corresponding domains and objectives. All of this information represents the industry-expert analysis of the job role(s) related to the certification and does not necessarily correlate one-to-one with the content covered in your training program or on your exam. We strongly recommend that you independently study to familiarize yourself with any concept identified here that was not explicitly covered in your training program or products.

Objectives

Domain 1.0   **Fundamental Concepts for Data-Driven Technology Ethics**

Objective 1.1   **Identify and describe common terminology or concepts important to data-driven technology ethics**

- AI-related concepts
- Data science-related concepts
- Legal-related concepts
- Privacy-related concepts
- Ethics
- Bias
- Evaluation metrics

Objective 1.2   **Identify and describe common ethical theories**

- Moral philosophy
- Applied ethics

Objective 1.3   **Identify when it is appropriate to conduct an ethical risk review**

- Ideation and innovation management activities
- What-if scenario planning sessions
- New product/service development
- All along the data science/AI development lifecycle, from ideation and design through deployment and maintenance
- Stage gates and other points as appropriate within an organization's Ethics-by-Design practices
- When legal and/or regulatory non-compliance has occurred
- When an ethical violation or incident has occurred

Domain 2.0   **Ethical Frameworks**

Objective 2.1   **Identify common ethical principles cited by major ethical frameworks**

- Privacy
- Accountability
- Safety and Security
- Transparency and Explainability

- Fairness and Non-Discrimination
- Human Control of Technology
- Professional Responsibility
- Promotion of Human Values

Objective 2.2 **Given an ethically challenging dilemma, identify and select an ethical framework to understand the issue**

- Initiatives

Objective 2.3 **Follow applicable regulations, standards, and best practices**

- Regulations
- Standards/best practices

Objective 2.4 **Identify ethical challenges that may conflict or require compromise with regulatory and/or business constraints or demands**

- Data minimization principle vs. need for data
- Performance vs. explainability
- Compliance vs. cost
- Transparency/explainability vs. intellectual property rights
- Company/stakeholder needs vs. ethical decision making
- Ethics washing
- Efficiency vs. the risk of collateral damage
- Proliferation of AI to unscrupulous actors vs. democratization of AI (e.g., open source)
- Efficiency of development vs. cultural/contextual sensitivity
- Availability of datasets for ML algorithms vs. privacy protection
- Big data generated through devices (cloud, IoT) vs. concentration of power in big tech
- Fair competition vs. corporate hegemony (data assets)
- Efficiency/streamlining experience vs. enabling human agency/autonomy
- Moral relativism vs. evidence-based policy

Domain 3.0 **Risk Identification and Mitigation**

Objective 3.1 **Identify and mitigate privacy risks**

- Source
- Methods of identification
- Mitigation strategies
- Tools for identification/mitigation

Objective 3.2 **Identify and mitigate privacy risks**

- Source
- Methods of identification
- Mitigation strategies
- Tools for identification/mitigation

Objective 3.3 **Identify and mitigate transparency and explainability risks**

- Source
- Methods of identification
- Mitigation strategies
- Tools for identification/mitigation

Objective 3.4   **Identify and mitigate fairness and non-discrimination (bias) risks**

- Source
- Methods of identification
- Mitigation strategies
- Tools for identification/mitigation

Objective 3.5   **Identify and mitigate safety and security risks**

- Source
- Methods of identification
- Mitigation strategies (Security-by-Design practices)
- Tools for identification/mitigation

Domain 4.0   Communication

Objective 4.1   **Effectively communicate with key stakeholders and/or team members (internal communication)**

- Identified ethical risks
- Business impacts
- Business incentives

Objective 4.2   **Effectively communicate about the ethical practices of the organization to outside parties (external communication)**

- Marketing/Public Relations
- Brand awareness/value
- Media inquiries
- Corporate reporting
- Organizational philosophy
- Disclosure statements

Domain 5.0   Organizational Policy and Governance

Objective 5.1   **Identify the elements that can help foster an ethical organizational culture**

- Training
- Leadership championing
- Incentive structures
- Culture-building workshops
- Creation of an ethics board
- Organizational resourcing

Objective 5.2   **Identify and describe the ethical considerations that shape policies regarding the development, use, and governance of technology**

- Fair competition
- Open data
- Privacy
- Intellectual property
- Fairness
- Non-discrimination
- Legal and regulatory requirements
- Human rights
- Accountability
- Transparency
- Animal rights/welfare

- Safety and reliability
- Environmental concerns
- Economic impacts
- Workforce impacts

Objective 5.3   **Follow recommended guidelines for developing a code of ethics**

- Identify internal and external stakeholders who should review or contribute
- Determine your organization's memberships in ecosystems, industry, and professional groups
- Collect codes of ethics from the above groups and aggregate their codes as a minimum baseline for your own code
- Consult with process owners to understand any factors which may frustrate or impede the adoption of more ethical practices
- Publish draft among stakeholders who will participate in a pilot for a determined length of time
- During the pilot period, interview stakeholders at predetermined intervals to understand impacts of change
- Upon completion of the pilot, update and ratify the code of ethics

Objective 5.4   **Follow recommended guidelines for developing an ethical organizational policy**

- Identify the need for the policy
- Identify the owner(s) of the policy
- Gather information about the policy
- Draft the policy
- Consult appropriate stakeholders
- Approve and publish the policy
- Establish procedures to support the policy
- Implement the policy
- Monitor and refresh the policy at regular intervals

Objective 5.5   **Evaluate the effectiveness of internal and external ethical policies**

- Sentiment analysis of public discussion
- Surveys and focus groups
- Periodic health check of ethical policies
- Number and severity of ethical violations
- Industry best practices/leading best practices

Recertification Requirements

The *Certified Ethical Emerging Technologist™ (CEET)* certification is valid for 3 years from the time certification is granted. In order to maintain a continuously valid certification, candidates can recertify via one of the following options:

1. Retake the most recent, up-to-date version of the exam before their certification expires.
2. Earn and submit enough continuing education credits (CECs) to recertify without retaking the exam.

Certified Ethical Emerging Technologist (CEET) Acronyms

Acronym	Expanded Form
AI	artificial intelligence
API	application program interface
BIPA	Illinois Biometric Information Privacy Act
CCPA	California Consumer Privacy Act
COPPA	Children's Online Privacy Protection Act
DoS	Denial of Service
ELI5	Explain Like I'm 5
EULA	End-user license agreement
FERPA	Family Educational Rights and Privacy Act
GDPR	General Data Protection Regulation
HIPAA	Health Insurance Portability and Accountability Act
IEEE	Institute of Electrical and Electronics Engineers
IoT	Internet of Things
ISO	International Organization for Standardization
LGPD	Lei Geral de Proteção de Dados (General Data Protection Law)
LIME	Local Interpretable Model-agnostic Explanations
MFA	multi-factor authentication
ML	machine learning
NIST	National Institute of Standards and Technology
NISTIR	National Institute of Standards and Technology Interagency or Internal Report
OECD	Organisation for Economic Co-operation and Development
PCI DSS	Payment Card Industry Data Security Standard
PII	personally identifiable information
PIPEDA	Personal Information Protection and Electronic Documents Act
POPI	Protection of Personal Information Act
RACI	Responsible, Accountable, Consulted, and Informed
RAM	responsibility assignment matrix
SDK	software development kit

SHAP	SHapley Additive exPlanations
SIEM	Security Information Event Management
SLA	service-level agreement
SME	Subject Matter Expert
SOP	standard operating procedure
SQLi	Structured Query Language Injection
SSO	single sign-on
ToS	Terms of Service
VAST	Visual, Agile, and Simple Threat

CertNexus offers personnel certifications and micro credentials in a variety of emerging technology skills including Cybersecurity, Cyber Secure Coding, the Internet of Things (IoT), IoT Security, Data Science, Artificial Intelligence, and Data Ethics. For a complete list of our credentials visit **https://certnexus.com/certification/**.

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