IDCAP

Institute for Decentralized
Crypto Asset Professionals

IDCAP Certification

CANDIDATE HANDBOOK

**Certified Crypto Asset Professional
Level 1 - Proficient**

IDCAP

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Dear Candidate,

Please allow me to welcome you to the IDCAP Crypto Asset Certification Programme. I hope you will enjoy the process and the you will emerge successfully on the other end.

The global crypto asset industry is growing at a breakneck speed, and it is connecting two disjoint worlds – the regulated world of traditional finance, and the free-wheeling world of crypto assets and blockchains. We believe that in the future there will only be one world – and to build it we need trusted professionals that are equally at ease at both sides of this world.

After an extensive dialogue with the industry, and with the help of our esteemed advisory panel, we have designed a certification process that ensures that IDCAP Certified Professional can be trusted to have the knowledge, skill and integrity it takes to move this industry forward.

Good luck from me and the whole IDCAP team, and please do not hesitate to contact us for questions, suggestions or any other comment you may want to make.

Stefan Loesch
CEO, IDCAP

idcap.org
decentralized.com

WHY IDCAP CERTIFICATION

Crypto asset markets have entered an unprecedented growth phase, driven by crypto native companies moving into the provision of regulated financial services on the one side, and traditional financial services companies expanding into crypto asset markets on the other side. As the industry is growing, it experiences a shortage of professionals that are equally at home at both worlds, severely restricting its growth potential.

The IDCAP Crypto Asset Professional Certification Programme addresses this point by providing structured certification, and training if needed, for crypto asset professional in all functions and at all levels of responsibility.

IDCAP Certified Professional

IDCAP Certified Professionals have passed a challenging professional exam, and thereby demonstrated mastery of their specific field of expertise, at the level required.

IDCAP Certified Professionals also keep their expertise up to date by following a targeted continuous development programme after they have passed the exam. They are also in good professional standing, and have pledged to abide by IDCAP's code of professional conduct.

I D C A P
LEVEL 1
CRYPTO ASSET PROFESSIONAL
CERTIFIED

The IDCAP offering

IDCAP's core offering to the crypto asset community is a structured certification programme, covering all important functional areas at all levels.

The certification syllabi and blueprints are validated with the crypto asset community via IDCAP's Advisory Panel and Board. The certification is administered by PearsonVUE, a leader in the field of professional examination, with over 5000 test centres world-wide.

IDCAP exam preparation and training is offered by IDCAP and IDCAP's partners. It is not mandatory to take part in a training programme to become IDCAP certified; passing the examination is sufficient.

IDCAP Certified Professionals maintain their IDCAP membership in good standing, ensuring they remain in touch with the latest developments of the market.

ABOUT IDCAP PROFESSIONAL CERTIFICATIONS

Level 1 Proficient	Level 2 Advanced	Level 3 Expert
• "Entry level" certification and minimum requirement for crypto asset professionals • Typical course duration 6 weeks, with a total of 60-100 hours of study depending on knowledge level • Core-curriculum only; covers blockchain, tokens and compliance fundamentals as well as overview over the eco-system	• Certification level suitable for most professionals • Typical course duration 12 weeks, total of 100-150 hours • Core curriculum (40%) and concentrations (60%) • Concentrations offered are Business and Compliance, Technology and Audit, Crypto Asset Investment Analysis and NFTs	• Highest certification level for "ninja"-level professionals • Typical course duration similar to level 2, but can depend on specialisation • No core curriculum; 100% focus on specialisation • Specialisations are focused on specific areas of expertise within the concentrations, eg "chain analysis and forensics"

IDCAP certified professionals follow a continuous professional development programme, ensuring they remain current in their professional knowledge. They also adhere to a professional code of conduct.

IDCAP Level 1 - Proficient

IDCAP Level 1 is the "entry level" IDCAP qualification, certifying a level of expertise to a standard that every crypto asset professional should have.

Crypto assets sit at the nexus of two important areas, a new and exciting technology on the one hand, and traditional financial services with a whole long history on the other end. Professionals tend to enter the space coming from either of those directions, and IDCAP certification means that they are knowledgeable in all relevant areas, regardless from where they come.

IDCAP Level 2 – Advanced

Most crypto asset professionals work in specific areas, and the Level 2 certification is aimed at those specialists. Level 2 consist of two parts, the **core curriculum** which extends and deepens the areas that had already been covered in Level 1, and the **concentrations**, which cover the specific areas the professionals are working in.

The IDCAP Level 2 concentrations are:

- **Business and Compliance.** For compliance professionals and general business staff.
- **Technology and Audit.** Audit and other staff responsible for safety of processes and assets.
- **Crypto Asset Investment Analysis.** Investment advisors and investors.
- **NFTs.** For professionals working with NFTs, especially in the arts space.

IDCAP Level 3 – Expert

IDCAP Level 3 finally is the highest IDCAP certified level. It offers certifications taught by specialists for specialists. Level 3 certifications will be offered at a later stage.

ABOUT THE IDCAP LEVEL 1 CERTIFICATION

The IDCAP Level 1 certification, full name **"IDCAP Certified Crypto Asset Professional, Level 1"** certification, is the first of the three certification levels offered by IDCAP.

Having passed IDCAP Level 1 certification ensures the basic expertise that every crypto asset professional requires to successfully perform their role. Level 1 certified professionals can be trusted to have a good understanding of

- Bitcoin and the basics of blockchain technology,
- Ethereum, the basics of smart contracts, tokens and decentralized finance
- the key components of the blockchain and token eco system, and finally
- the regulatory and business framework in which those technologies operate

Bitcoin and blockchain basics

This module introduces the key cryptographic primitives and shows how they work together to create the Bitcoin blockchain. It also describes the practical aspects of operating in a blockchain environment, from the various participants' perspectives.

Ethereum, tokens and Defi

This module adds smart contracts to the mix and shows how they can be used to create eco systems of fungible tokens and NFTs. It also discusses the basics of decentralized finance.
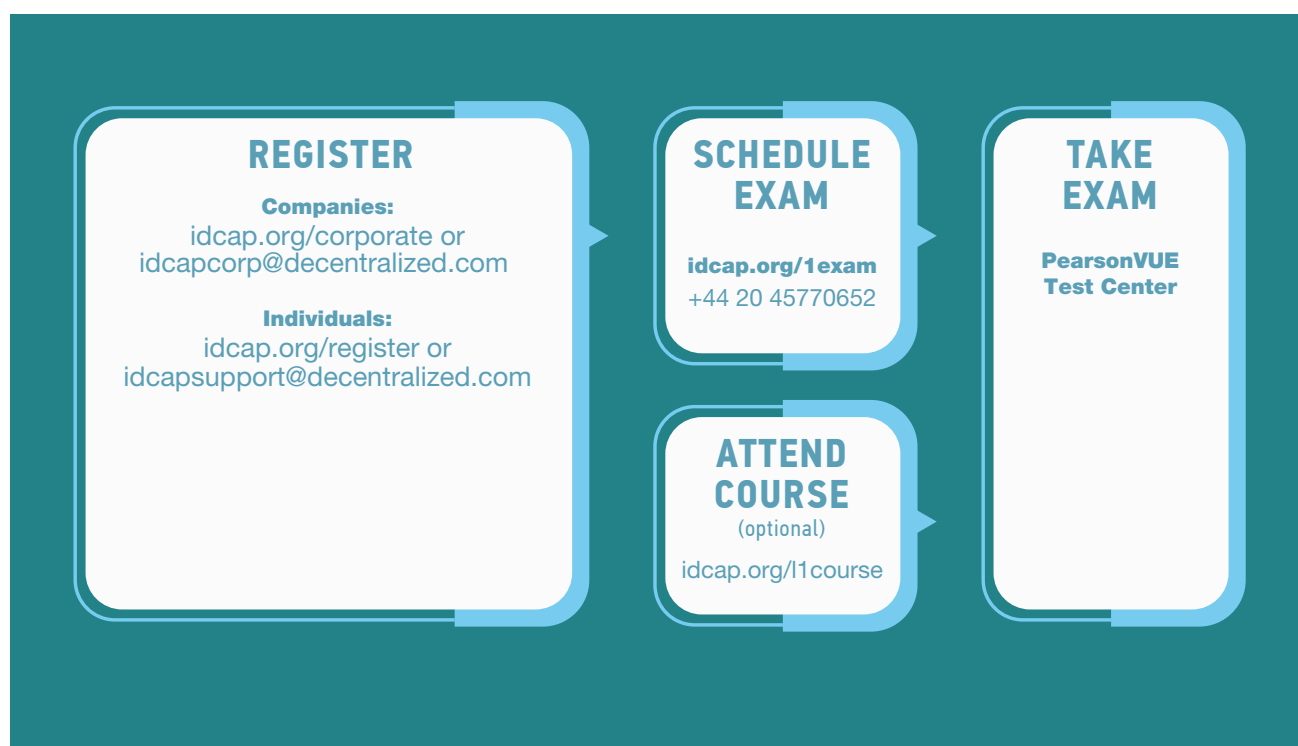
Blockchain and protocol eco-system

This module introduces the top 50-100 blockchains and token-issuing protocols / ventures active in the blockchain space to give a very brief overview over the eco-system.

Compliance and regulations

This module covers the compliance and regulatory aspects of the crypto asset eco-system. It references the key global regulatory frameworks as well as some selected local ones.

HOW TO PARTICIPATE

REGISTER

Companies:
idcap.org/corporate or
idcapcorp@decentralized.com

Individuals:
idcap.org/register or
idcapsupport@decentralized.com

SCHEDULE EXAM

idcap.org/1exam
+44 20 45770652

ATTEND COURSE

(optional)

idcap.org/l1course

TAKE EXAM

PearsonVUE
Test Center

IDCAP LEVEL 1 CERTIFICATION SYLLABUS

The syllabus of the IDCAP Level 1 certification consists of four major modules

1. Bitcoin and blockchain basics (30%)
2. Ethereum, tokens, and decentralized finance (30%)
3. The blockchain and protocol eco-system (20%)
Compliance and regulations (20%)

The reference course material is designed to be taught over a six-week period, with a total of 60-100 hours of work to be put in by the student, depending on their current level of understanding. The number in parentheses gives the approximate percentage of course time that is dedicated to each topic.

1. BITCOIN AND BLOCKCHAIN BASICS

History of Bitcoin and other crypto assets

1. Hashcash and other Bitcoin predecessors
2. Satoshi Nakamoto and the Bitcoin whitepaper
3. Important events in the history of crypto assets
4. Historic price dynamics and volatility
5. Crypto assets vs blockchain-registered securities

Bitcoin technical fundamentals

Hashes, Merkle trees, signatures and other cryptographic primitives

1. Hashes
2. Merkle trees, hash chains and blockchains
3. Digital signatures, public keys and addresses

UTXO vs account-based models

1. Definition of "UTXO", and Bitcoin UTXO examples
2. Comparison UTXOs vs accounts
3. Consensus algorithms
4. Purpose of consensus algorithms
5. Bitcoin's proof-of-work and its uses
6. Proof-of-stake and its use cases
7. Private chains and proof of authority

Bitcoin nodes

1. Purpose of nodes and their functionality
2. Different types of nodes

Bitcoin economic fundamentals

Bitcoin mining

1. Bitcoin mining and miners
2. Bitcoin issuance schedule
3. Fees and transaction priority

Difficulty adjustment

1. Maths and mechanics
2. Economic impact

Bitcoin energy usage

1. Bitcoin energy usage
2. Energy saving alternatives
3. Crypto assets and ESG

Crypto asset practical usage

Crypto asset wallets

1. Wallet: definition and functionality
2. Custodial vs self-hosted wallets
3. Hot vs cold wallets
4. Wallet security and key backup

Sending, receiving and trading crypto assets

1. Bitcoin transaction lifecycle
2. Sending and receiving crypto assets
3. Exception handling and error recovery
4. Using centralised and decentralised exchanges

Transaction privacy, safety and chain analysis

1. Using a block explorer to trace transactions
2. Address reuse, coin mixing, and other transaction obfuscation methods
3. Chain analysis
4. Key safety and multisig
5. Creation and representation of single private keys
6. Hierarchical deterministic key generation
7. Multisig and its applications
8. Key protection strategies

2. ETHEREUM, TOKENS, AND DECENTRALIZED FINANCE

Smart contract basics

Introduction to smart contracts

1. Smart contracts vs legal contracts
2. Ricardian contracts

Bitcoin scripting language vs EVM

1. BTC scripting language
2. Gap analysis and the EVM

The Ethereum smart contract model

Ethereum Virtual Machine (EVM)

1. General purpose computation environment
2. Replicable deterministic execution
3. Persistent data store (key/value maps)
4. Output handling (event system)
5. Number handling and fractions
6. Bytecode vs high level languages

Solidity and other EVM languages

1. Solidity language classification
2. EVM data store API
3. EVM event system API
4. Immutability and contract upgrades
5. Contract libraries

Gas, contract execution and transaction priorities

1. Purpose of gas
2. What costs and earns gas
3. Gas price, priorities and private execution

Layer 1, layer 2 and sharding

1. Scaling solutions purpose and overview
2. Sharding and sidechains

3. Optimistic and zk rollups
4. Ethereum economics and mining

Ethereum mining and mining economics

1. Difference between Ethereum and Bitcoin mining
2. Ethereum mining economics
3. Ethereum issuance schedule
4. Ethereum gas price economics

Token eco-systems

Fungible tokens (ERC20)

1. Fungible tokens and their use cases
2. Introduction to token standards in general
3. The ERC20 token standard

Security tokens, stable coins and CBDCs

1. Security tokens and their use cases
2. Stable coins, CBDCs and their use cases
3. Security token standards

Non-fungible tokens (NFTs)

1. Non-fungible and partially fungible tokens and their use cases
2. NFT for arts, collectibles and metaverse items
3. The ERC721 and ERC1155 NFT standards

Decentralized finance ("Defi")

1. Defi design and principles
2. Lending, AMM and other important Defi primitives
3. Defi composability examples

3. THE BLOCKCHAIN AND PROTOCOL ECO-SYSTEM

Taxonomy and classification

Classification criteria

1. Blockchain vs protocol
2. Token economics and governance
3. Block producer economics and consensus
4. Data privacy models
5. Consensus models, game theory and finality
6. Blockchain privacy models
7. UTXO vs account based models
8. Scripting capabilities

Blockchain governance models

1. Importance of governance
2. Governance vs consensus
3. Blockchain governance models and the "governance spectrum"

Important blockchains

Bitcoin and Bitcoin derivates
Ethereum and Ethereum derivates
Privacy chains
Enterprise chains
Other chains

Important protocol and venture tokens

Stable coins
Venture tokens
Defi protocol tokens

4. COMPLIANCE AND REGULATIONS

Purpose and types of regulations

Purpose of regulations

1. Market failures requiring regulation
2. Policy support objectives

Types of regulations

1. Prudential regulations
2. Market structure regulations
3. Customer protection regulations
4. Policy support regulations

Key regulatory areas

Prudential regulations

1. Macro prudential
2. Micro prudential

Market structure regulations

1. Access
2. Transparency
3. Fairness

Customer protection regulations

1. Imbalance of power
2. Vulnerable customers
3. Fiduciary duties / KYC

Policy support regulations

1. Money laundering (AML)
2. Terrorist financing (CTF)
3. PEPs and embargoes
4. KYC vs KYC

Important regulatory regimes

The global regulatory regime

1. FATF
2. Basel
3. Other

The EU regulatory regime

1. The EU regulatory institutional framework
2. EU vs member state competencies
3. Selected EU regulations relevant for the crypto asset space

The US regulatory regime

1. The US regulatory institutional framework
2. Federal vs state-level law making power in the US
3. Selected US regulations relevant for the crypto asset space

Other crypto asset jurisdictions and initiatives

1.
Bitcoin and blockchain basics

2.
Ethereum, tokens and decentralized finance

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3.
The blockchain and protocol eco system

4.
Compliance and regulation

IMPORTANT INFORMATION FOR YOUR EXAM

IDCAP is partnering with PearsonVUE, the global leader in the administration of rigorous testing for professional certifications, for delivering the exam in one of PearsonVUE's about 5000 test centres world-wide. To ensure maximum integrity and reliability, the exam is only delivered in person, there is no online option. The exam centres operate a very strict test-taking protocol, so please make sure you are prepared by reading this section carefully. Non-compliance with the protocol requirements can lead to you missing and/or not passing the certification exam.

Registration, scheduling and modifications

Registration

Individuals must first register for the IDCAP exam – and optionally the exam preparation course – on idcap.org/register or by contacting the support team at idcapsupport@ decentralized.com. Companies wanting to purchase multiple seats should contact the IDCAP corporate coverage team at idcap.org/ corporate or idcapcorp@decentralized.com.

After registration, both individuals and companies will receive an email with further instructions how to register for the exam. If you do not receive this email, please contact your sales or coverage person, or the IDCAP help desk at idcap.org/help or via email to idcaphelp@decentralized.com.

Scheduling

IDCAP exams can be scheduled via the PearsonVUE call center or the PearsonVUE website. For scheduling exams via the call center there is a US$20 charge collected by PearsonVUE when scheduling. Scheduling exams via the web site is free, and the call centers will answer questions for assisting with online scheduling free of charge.

Pearson VUE Demo

If you would like a preview of the Pearson VUE computer-based testing platform, go to pearsonvue.com/demo to launch the demo. It includes information about question types and the user interface so that you can become familiar with it prior to taking your exam.

Rescheduling and cancellation

You can cancel or reschedule your exam on the web up to 72 hours before the exam at no charge. You can also reschedule or cancel

via the PearsonVUE call center up to 72 hours before the exam for a fee of US$20.

If you cancel or reschedule an exam within 24 to 72 hours of your scheduled time, there will be a fee of US$100 collected by Pearson VUE. If you cancel your exam within 24 hours or do not show up for your scheduled exam, you will need to contact IDCAP and you will be charged for a new authorization (€149).

If you cancel an exam without rescheduling, you can go through the scheduling process again at a later date. You can not usually get your registration fee refunded. However, in depending on your specific circumstances IDCAP may be able to make an exception. In this case, please contact the IDCAP help desk at idcap.org/help or via email at idcaphelp@ decentralized.com.

Summary of charges

The following table shows a summary of the different charges mentioned in the preceding paragraphs. In case of discrepancies the charges in the table below are deemed to be correct

Scheduling, rescheduling or cancellation via PVUE website	>72h: free 24-72h: US$100 <24h: impossible
Ditto via phone	Add US$20 to the figures above
Phone assistance for using the PVUE website	Free at any time
Rescheduling <24h	€149
Exam re-take	€149

IDCAP

Examination Day

Arrival time

Please plan to arrive at least 30 minutes before the scheduled appointment to allow time for check-in. Candidates who arrive later than that may not be allowed to test, or may have less time to complete the test.

Two forms of identification

You must bring with you two forms of current and valid government-issued identification bearing a photograph and a signature. The name on the identification must match the name used for registration.

Identification requirements

The first and last name the candidate uses to register must exactly match the first and last name on IDs that are presented on test day.

When you get your scheduling confirmation please ensure that the first and last names on the confirmation email match the first and last name on both your ID documents. If this is not the case, please contact our help desk at idcap.org/help or idcaphelp@decentralized.com.

All IDs required must be issued by the country/ region in which the candidate is testing. If the candidate does not have a qualifying primary ID issued from the country/region they are testing in, an international travel passport from their country/region of citizenship is required, along with a secondary ID.

The candidate is required to present two forms of original (no photo copies or digital IDs), valid (unexpired) IDs; one form as a primary ID (government issued with name, recent recognizable photo, and signature) and one form as a secondary ID (with at least a name and signature, or name and recent recognizable photo).

Additional ID allowances

Expired forms of ID are only acceptable if they are accompanied by valid renewal papers. If a government issued ID is missing a visible signature (or has an embedded signature), the candidate is allowed to test as long as the other

requirements for primary and secondary IDs are met.

For candidates testing in Japan, please see this link for Japan ID policy.

Candidate exceptions to the ID policy are possible in specific cases, but must be pre-approved by the Pearson VUE customer service center at least 3 business days before the scheduled exam appointment. If you have any questions about the ID requirement, please contact Pearson VUE customer service at pearsonvue.com/IDCAP/contact.

Examination integrity

PearsonVUE has strict security measures in place ensure the integrity of the examination. These security measures include:

Proctors – There will be examination proctors present before, during, and after the examination to ensure that all rules and regulations are followed.

Video Cameras – There are video cameras surrounding the examination site of every testing center to ensure that no assistance is given during the examination.

Audio – There is a live audio recording of each examination session to ensure that no assistance is given during the examination. The examination performance of all candidates is monitored and may be analyzed statistically for purposes of detecting and verifying any form of cheating.

If it is determined that a score has questionable validity, after appropriate review, the score will be marked as invalid, and the candidate may be barred from retesting indefinitely or for a period as determined by IDCAP.

Non-disclosure

Candidates are advised that they cannot disclose exam materials, including questions or answers. This includes discussing the content of the exam with anyone; recording, copying, or disclosing any exam question or answers, in whole or in part, directly or indirectly, in any form or by any means whatsoever, including "chat rooms", message boards, forums, etc.

Examination procedures

You will have two hours to complete the exam. This time includes ancillary tasks like accepting terms and conditions and potentially going through additional explanations, so the effective time for answering exam question may be shorter. Additional time will not be allowed. There are no scheduled breaks. Candidates must have the permission of the proctor to leave the testing room.

No questions concerning the content of the exam may be asked during the testing period. It is the responsibility of each candidate to read the directions given on the computer and listen carefully to the instructions given by the proctor.

The proctor reserves the right to dismiss a candidate from the examination for any of the following reasons:

1. If the candidate's admission to the exam is unauthorized.
2. If a candidate creates a disturbance, is abusive or is otherwise uncooperative.
3. If a candidate gives or receives help or is suspected of doing so.
4. If a candidate attempts to remove examination materials or notes from the testing room.
5. If a candidate is discovered in possession of an electronic communication or recording device.

Items not permitted

The following items are not permitted in the testing area:
- Personal items and electronics, including but not limited to mobile phones, hand-held computers, personal digital assistants or other electronic devices, pagers, watches, wallets, purses, firearms or other weapons, hats (and other non-religious head coverings), bags, coats, jackets, eyeglass cases, pens, or pencils
- Barrettes or hair clips that are more than 1/4 inch (1/2 centimeter) wide and headbands or hairbands that are more than 1/2 inch (1 centimeter) wide.
- Jewelry that is removable and more than 1/4 inch (1/2 centimeter) wide.
- Books and/or notes unless specifically authorized by IDCAP for your use during the exam.

You must store all personal items in a secure area as indicated by the test administrator or return them to your vehicle. **If you refuse to store your personal items, you will be unable to test, and you will lose your test fee.** All electronic devices must be turned off before storing them in the designated secure area.

Results and confidentiality

Candidates will receive their exam results (pass or fail) immediately at the conclusion of the test. Results will not be given over the telephone, by facsimile, or electronic mail.

Contrary to the above, the results of the genesis cohort exams will not be immediately available, but only be after a cut-score analysis has been performed. IDCAP will be in contact with the candidates for details.

When an organization pays for an individual's examination, the organization may request IDCAP to release the result to the organization. If a candidate does not want this information to be released to the organization, then the candidate must notify IDCAP in writing.

Post exam

Scheduling a re-take

Candidates who have failed their exam can schedule a re-take. Scheduling a re-take requires a new authorisation which is charged at €149. Please contact the IDCAP help desk at idcap.org/help or via email at idcaphelp@decentralized.com.
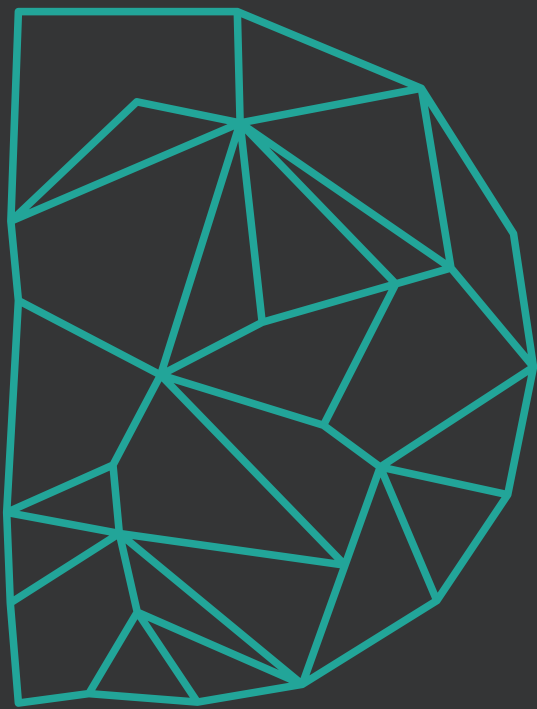
Appeals

IDCAP provides an appeal mechanism for challenging denial of admission to the exam or revocation of the certification. It is the responsibility of the individual to initiate the appeals process by written request to IDCAP within 30 days of the circumstance leading to the appeal. The request can be lodged at at idcap.org/help or idcaphelp@decentralized.com. Failure of the exam alone does not constitute grounds for a review and appeal.

Data and Privacy Policies

To read through Pearson Vue's data and privacy policies please visit www.pearsonvue.com/privacy.