

# **ANDE-1-2021 Psychometric Examination Requirements**

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The ANDE-1 Standard requires that the certification body (CB) shall develop and maintain written examinations and practical demonstrations based on the psychometric process. The standard defines the psychometric process as the science and technology of measurement used to develop and analyze assessments of cognitive and skill ability. No other NDT certification scheme requires psychometrically validated examinations. What is psychometrics? Psycho (Greek) means mental; metrics means measurement. Psychometrics is a branch of psychology that is concerned with the theory and technique of measurement. Psychometricians focus on the construction and validation of assessment instruments (examinations) and measurement theory to ensure reliability. What are the characteristics of defensible certification examinations? They must be reliable and valid. Reliable means the degree to which the test score is error free, consistent and quantifiable. Validity is the degree to which a test measures what it is intended and provides a meaningful interpretation of scores. Test questions are referred to as items. Most certification programs use objective items in the multiple-choice format. This format provides for a high degree of consistency and reliability. Forms (examinations) and their items are intended and designed to sort candidates on a measure of competency. In contrast school examinations are designed for teaching and feedback. Statistical analysis of forms is used to quantitatively determine their effectiveness. This includes their difficulty, discrimination index, reliability and descriptive statistics. The Angoff method uses subject matter experts to judge item difficulty in a form and set the cut-off score. The method calculates the cut-off score based on candidates in relation to a defined standard (absolute) as compared to their peers (relative) approach. It is test-centered versus examinee-centered and is widely used for high stakes examinations and is defensible in courts. This methodology also applies to development and evaluation of performance examinations. This presentation focuses on the psychometric process for development and implementation to ensure highly valid and reliable qualifications NDT examinations. This is essential to assure candidates granted certifications are knowledgeable and skill to the designated level to perform the associated tasks.