

University of Houston
Texas Core Curriculum Learning Objective Assessment
Empirical and Quantitative Skills

The Texas Administrative Code defines Empirical and Quantitative Skills (EQS) as “the manipulation and analysis of numerical data or observable facts resulting in informed conclusions” (19 Tex. Adm. Code §4.28 (2021)).

The University of Houston is required to assess student performance in each of the six Core Curriculum Objectives.

Faculty would choose to assess student work with **either** the EQS Computational Rubric or the EQS Analytical Rubric.

Faculty using multiple-choice exams for the assessment would map student achievement to the rubrics. When using multiple choice exams, it may not be possible to identify student performance at the Advanced level or in all Domains (rows).

EQS Computational Rubric

Domain	Advanced (4)	Competent (3)	Developing (2)	Beginner (1)	Not Present (0) ¹
Set-Up	Efficiently represent the problem in its entirety.	Represented problem adequately but not in the most efficient or complete way.	Represented with some relationship to the problem.	Represented with little to no relationship to the problem.	No set up provided.
Computation	Calculations include no errors.	Calculations include only minor errors.	Calculations are appropriate, but include substantial errors.	Calculations are inappropriate or inaccurate.	No calculation provided.
Interpretation	Results are competently and thoroughly interpreted with no errors.	Results are competently interpreted but with minor omissions or inaccuracies.	Results are partially or incorrectly represented.	Results are not interpreted in the context of the problem.	No results provided.

Notes:

¹If the assignment or question did not ask students to demonstrate the skill, do not provide an assessment. Use “not present” only when the skill is required but not evinced.

Adapted from the Texas A&M University (TAMU) Core Curriculum Empirical and Quantitative Skills Computational Rubric, licensed under [CC BY-NC-SA. 4.0](#). The TAMU Rubric draws on the American Association of Colleges and Universities (AAC&U) [Quantitative Literacy VALUE Rubric](#).

EQS Analytical Rubric

Domain	Advanced (4)	Competent (3)	Developing (2)	Beginner (1)	Not Present (0) ¹
Presentation of Numerical Data / Observable Facts	Data and results are well aligned with the specific problem / topic being investigated. Results are presented in a concise and efficient manner.	Connections between the data and results and the problem / topic being investigated are explicit and appropriate. Results are organized.	Connections between the data and results to the problem / topic being investigated may be implicit. Results are loosely organized.	Limited or ineffectual presentation of sufficient data to make a connection to the problem / topic.	No results present.
Analysis² / Conclusions³	Draws meaningful, independent conclusions based on data and results. Conclusions demonstrate a sophisticated understanding of the problem / topic.	Draws appropriate, independent conclusions based on data and results. Conclusions demonstrate a sufficient understanding of the problem / topic.	Presents independent conclusions based on data and results. Conclusions demonstrate a surface-level understanding of the problem / topic.	Presents limited or weak conclusions based on data and results. Conclusions may include obvious judgements about the problem / topic rather than drawing independent conclusions.	No attempt to draw conclusions.
Methods⁴ (This category is only applied when students generate their own data sets.)	Methods (theories / principles underlying design, subjects, instruments, data collection, and analyses) are formed from a foundation based on the research literature and are organized and described with sufficient clarity.	Methods (theories / principles underlying design, subjects, instruments, data collection, and analyses) are organized and described with sufficient clarity.	Methods (theories / principles underlying design, subjects, instruments, data collection, and analyses) are organized.	Missing or loosely organized methods used to describe research design, subjects, instruments, data collection, and analyses.	No methods present.

Notes:

¹If the assignment or question did not ask students to demonstrate the skill, do not provide an assessment. Use “not present” only when the skill is required but not evinced.

²**Analysis** is defined as detailed and careful examination to understand, explain, or critique. This process often involves breaking the subject matter into parts to better understand the whole. This rubric assesses the products of analysis rather than the process itself.

³**Conclusions** are defined as the synthesis of key findings drawn from research, evidence, and / or analysis ([AAC&U Inquiry and Analysis VALUE Rubric](#)).

⁴**Methods** are defined as the theories / principles underlying design, subjects, instruments, data collection, and analyses. This rubric category only applies when students generate their own data sets; otherwise, no score (as opposed to not present) is recorded.

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