**Math & Statistics**

**Overview:** KU Core 34 goals are aligned with the University’s [Institutional Learning Goals](https://assessment.ku.edu/institutional-learning-goals) (ILGs). The KU Core 34, KU’s general education curriculum, is assessed by the University Assessment Committee to measure student achievement of the ILGs. This is a separate process from degree-level assessment.

KU Core 34 goals are assessed in the aggregate using a sample of anonymous student assignments from each course meeting the KU Core 34 goal. KU Core 34 assessment is not designed to assess courses individually but rather to assess how the entire goal is meeting the learning outcomes and goal. Results of the assessment are provided to all instructors teaching courses within a particular KU Core 34 goal. Course instructors will be asked to reflect on the results during the University Core Curriculum Committee’s (UCCC) recertification process.

**Signature Assignments:** [Inclusion](https://kucore.ku.edu/criteria-inclusion) in the KU Core 34 curriculum requires courses to create one signature assignment across all sections. The signature assignment must meet the signature assignment parameters provided below. The University Assessment Committee will use the rubric below to assess student learning using a sample of signature assignments collected from each course. The UCCC expects courses to meet all learning outcomes and the milestones outlined in the rubric throughout their courses but acknowledges it may be challenging to do that within one assignment. Therefore, you are only required to meet the number of criteria outlined below.

The highlighted boxes on the rubric show the milestone students are expected to achieve in a foundational course. These milestones were selected by the UCCC with input from constituents teaching courses within each goal.

**Institutional Learning Goal:** Analytical Reasoning – Access, evaluate, and use qualitative and/or quantitative information to identify patterns, formulate and support interpretations.

**KU Core 34 Learning Outcome:** Upon reaching this goal, students will be able to define a problem, analyze numerical information, apply mathematical principles, and integrate quantitative methods into problem solving.

**Signature Assignment Parameters:** The signature assignment should be a faculty-designed assignment which presents students with the opportunity to fulfill at least **four** of the criteria outlined below:

* Accurately explain information presented in mathematical forms (e.g., explaining trends on a graph)
* Convert relevant information into the appropriate and desired mathematical representation
* Successfully and sufficiently calculate solutions to the problem(s)
* Use quantitative analysis as the basis for making judgments
* Make and evaluate assumptions
* Present work steps clearly and logically with detailed explanations and justifications

**Math & Statistics Rubric**

The following rubric was adapted from existing validated and reliable AAC&U Value rubrics. The signature assignment submitted for your course will be evaluated using this rubric. The highlighted portions indicate the milestone that students in foundational KU Core 34 courses within this goal will be expected to achieve. These milestones were selected by the UCCC with input from constituents teaching courses within each goal.

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|  | **Capstone**  | **Milestones** | **Benchmarch** |
|   | *Assignment designed for students to demonstrate level of mastery of the outcome**4* | *Assignment designed to reinforce previously practiced outcome**3* | *Assignment designed to afford student practice with the outcome*2 | *Assignment designed to introduce the outcome*1 |
| **Interpretation** *Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)*  | Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. *For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.*  | Provides accurate explanations of information presented in mathematical forms. *For instance, accurately describes trends shown in a graph and correctly interprets the significance and context of these trends, demonstrating a clear understanding of the data.*   | Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. *For instance, identifies trends shown in a graph but might misinterpret the significance or context of the trends.*   | Attempts to explain information presented in mathematical forms but draws incorrect conclusions about what the information means. *For example, attempts to explain the trend data shown in a graph, but will frequently misinterpret the nature of that trend, perhaps by confusing positive and negative trends.*  |
| **Representation** *Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)*  | Skillfully converts relevant information into an insightful mathematical representation in a way that contributes to a further or deeper understanding.  | Competently converts relevant information into an appropriate and desired mathematical representation.  | Completes conversion of information but resulting mathematical representation is only partially appropriate or accurate.  | Completes conversion of information but resulting mathematical representation is inappropriate or inaccurate.  |
| **Calculation**  | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.)  | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem.  | Calculations attempted are either unsuccessful or represent only a portion of the calculations required to comprehensively solve the problem.   | Calculations are attempted but are both unsuccessful and are not comprehensive.  |
| **Application/Analysis** *Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis*  | Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work.  | Uses the quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions from this work.  | Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work.  | Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work.  |
| **Assumptions** *Ability to make and evaluate important assumptions in estimation, modeling, and data analysis*  | Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions.  | Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate.  | Explicitly describes assumptions.  | Attempts to describe assumptions.  |
| **Showing Your Work.**  | Provides all steps of the work comprehensively and in a highly organized manner, with clear and detailed explanations at each stage. Explanations include thorough justifications and insights, making the reasoning transparent and ensuring that conclusions are fully understood  | Provides most steps of the work in a clear and logical manner with well-explained transitions between steps. Explanations are detailed and include justifications, making it easy to follow the reasoning and understand how conclusions were reached.  | Provides some steps of the work but with several gaps or unclear transitions between steps. Explanations are present but may be brief or lack sufficient detail, making it somewhat challenging to follow the reasoning and understand how conclusions were drawn.  | Provides minimal or incomplete work with many missing steps, making it difficult to follow the thought process. Explanations, if present, are unclear and lack justification, leading to confusion about how conclusions were reached.  |