COMMITTEE ON ACADEMIC PLANNING AND REVIEW

18-19 CAPR 7
February 7, 2019

TO:	The Executive Committee
FROM:	The Committee on Academic Planning Review (CAPR)
SUBJECT:	18-19 CAPR 7: Request for University Adoption of Institutional Learning Outcome (ILO) Quantitative Reasoning Measurement Rubric
PURPOSE:	For action by the Academic Senate
ACTION REQUESTED:	That the Academic Senate accept this request for University Adoption of Institutional Learning Outcome (ILO) Quantitative Reasoning Measurement Rubric, effective upon signature of the President

BACKGROUND:

At its meeting on February 7, 2019, CAPR members unanimously approved for University–wide adoption the ILO Quantitative Reasoning measurement rubric which has been developed and piloted by faculty and approved by the ILO Subcommittee. The ILO Quantitative Reasoning rubric will be used for ILO assessment as approved in the CSUEB ILO Long Term Assessment Plan. Alignment of Program Learning Outcomes to Institutional Learning Outcomes for pram review was a deliverable during conversion to semesters.

CSU East Bay, Institutional Learning Outcomes

The California State University East Bay Institutional Learning Outcomes (ILOs) express a shared, campus-wide articulation of expectations for all degree recipients. Graduates of CSUEB will be able to:

- think critically and creatively and apply analytical and quantitative reasoning to address complex challenges and everyday problems;
- communicate ideas, perspectives, and values clearly and persuasively while listening openly to others;
- apply knowledge of diversity and multicultural competencies to promote equity and social justice in our communities;
- work collaboratively and respectfully as members and leaders of diverse teams and communities;
- act responsibly and sustainably at local, national, and global levels;
- demonstrate expertise and integration of ideas, methods, theory and practice in a specialized discipline of study.

Request for University Adoption of Institutional Learning Outcome (ILO) Quantitative Reasoning Measurement Rubric

Summary

The ILO Subcommittee is requesting approval from CAPR for University–wide adoption of the ILO Quantitative Reasoning measurement rubric which has been developed and piloted by faculty, and approved by the ILO Subcommittee. The ILO Quantitative Reasoning rubric will be used for ILO assessment as approved in the CSUEB ILO Long Term Assessment Plan. Alignment of Program Learning Outcomes to Institutional Learning Outcomes was a deliverable during conversion to semesters.

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34   **Background of Rubric Development, Pilot, and Recommendations**

Faculty, Fall 2016 ILO QR Rubric Development			
First Name	Last Name	College	Department
Julie	McNamara (Co–lead)	CEAS	Teacher Education
Julia	Olkin (Co–lead)	COS	Mathematics
Ayona	Chatterjee	COS	Statistics and Biostatistics
Arnab	Mukherjea	COS	Health Sciences
Bala	Rajan	CBE	Department of Management
Caron	Inouye	COS	Biological Sciences
Pradeep	Ramanathan	CLASS	Communicative Sciences and Disorders
Deepika	Mathur	CLASS & COS	Human Development Health Sciences

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ILO QR Faculty Pilot Group, Fall, Winter 2018		
Faculty	College	Department
Monica Sommerhalter	COS	Chemistry
Pradeep Ramanathan	CLASS	Speech Pathology
Julia Olkin	COS	Math
Vanessa Yingling	CEAS	Kinesiology
Bala Rajan	CBE	Management
Vibha Puri	CLASS	Sociology
Jeri Little	COS	Psychology

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39   **Pilot Design**
40   Fall 2017: QR Faculty met together and refined a course assignment to align to the QR rubric;
41   sample student work collected.
42   Winter 2018: QR Faculty met and received training in secondary assessment and assessed their
43   own senior- level assignment in their course using the ILO QR rubric using Blackboard Outcomes -
44   an electronic learning assessment platform that is part of Blackboard Learn. They provided
45   feedback on the process and the rubric's utility. Not all criteria were required for every assignment;
46   each assignment used a minimum of 4 criteria. No "core" domains were required for all, so an N/A
47   assessment category was used for criteria not being assessed.
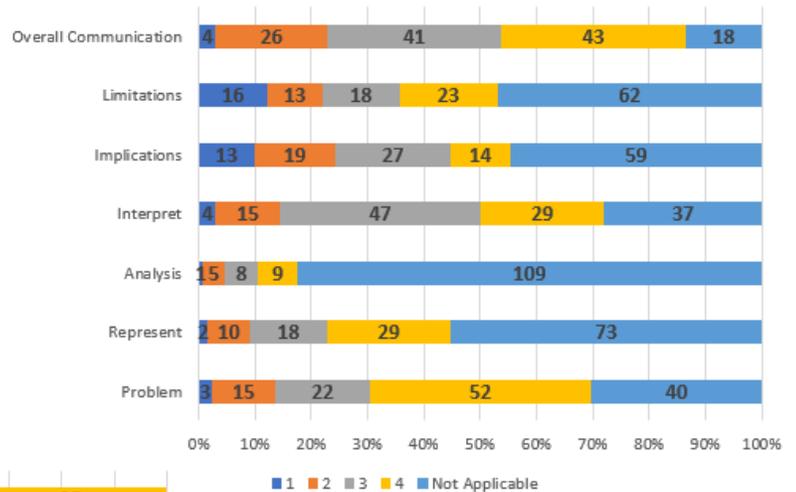48
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54 **Spring 2018 ILO Subcommittee and Pilot Faculty Assessment Results**
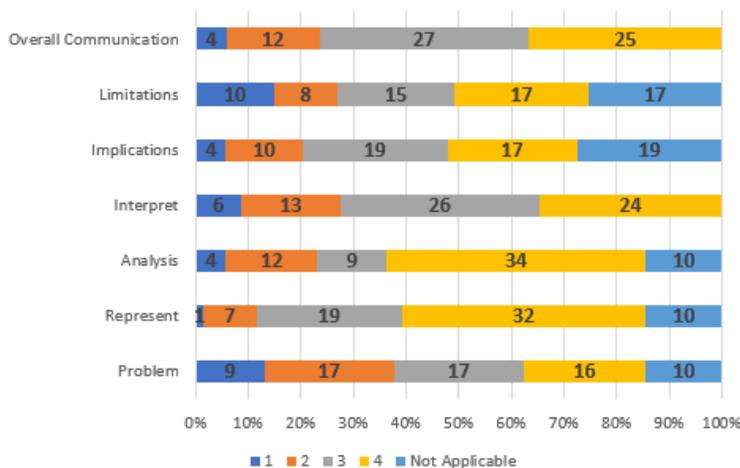55 To determine if QR Rubric assessment required disciplinary expertise, both QR faculty and ILO
56 Subcommittee received training and assessed student work. Pilot faculty 1) thought rubric worked
57 well and 2) were uncertain if faculty outside discipline had expertise to assess assignment.
58 Early on in the assessment, ILO Subcommittee faculty determined they had a "low confidence"
59 rating assignments. The decision was made to complete the assessment using the "not applicable"
60 (N/A) rating option when needed.
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62 The results of the QR Faculty assessment demonstrated that the rubric performed within normal
63 expectations. The assessment results from the ILO Subcommittee had a low validity due to low
64 confidence of ILO faculty assessing quantitative reasoning from outside their discipline.
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ILO Subcommittee: Distribution of Scores

	1	2	3	4	Not Applicable
Overall Communication	4	26	41	43	18
Limitations	16	13	18	23	62
Implications	13	19	27	14	59
Interpret	4	15	47	29	37
Analysis	15	8	9		109
Represent	2	10	18	29	73
Problem	3	15	22	52	40

Faculty Assessors: Distribution of Scores

	1	2	3	4	Not Applicable
Overall Communication	4	12	27	25	
Limitations	10	8	15	17	17
Implications	4	10	19	17	19
Interpret	6	13	26	24	
Analysis	4	12	9	34	10
Represent	1	7	19	32	10
Problem	9	17	17	16	10

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Action Requested

#1 Adopt the ILO QR rubric: Once approved by CAPR and Senate, the rubric will be used according to the CSU East Bay ILO Long Term Assessment Plan. The rubric will also be posted on the ILO Subcommittee page and made available to faculty in the Rubrics Library.

#2 Support the finding that ILO Assessment will need to be conducted by Disciplinary Faculty: The ILO Subcommittee recommends that faculty who have aligned their upper division course to the ILO of Quantitative Reasoning receive training in secondary assessment and assess their own assignments. The training and assessment would be elective for faculty and funded through Academic Programs and Services.

ILO Rubrics in Development

There are five remaining ILO rubrics currently in development and/or pilot which are Social Responsibility, Sustainability, Social Justice, Collaboration and Teamwork, and Leadership.

	4	3	2	1
CSU East Bay ILO Quantitative Reasoning Draft Rubric 9-10-18 Approved by ILO Subcommittee Description: Quantitative Reasoning (QR) is competency and comfort in working with numerical data. It involves understanding and applying mathematics/statistics to analyze and interpret real-world quantitative information in a disciplinary context. Individuals with strong QR skills possess the ability to reason about and solve quantitative problems from a wide array of contexts. They understand and can create sophisticated arguments and conclusions supported by quantitative evidence and can clearly communicate those in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).				
Problem Formulation Translation of the disciplinary/real-world problem into a QR context (e.g., writing a hypothesis, a math model, quantitative instrumentation). Use and interpretation of quantitative data/information to identify or formulate a problem.	Formulation of the problem is comprehensive and placed in an appropriate quantitative context.	Formulation of the problem is adequate and placed in an appropriate quantitative context.	Formulation of the problem is limited; explanation of the context is somewhat incorrect or incomplete.	Formulation of the problem is incorrect or missing; explanation of the context is incorrect or incomplete.
Representation/Visualization Depiction of quantitative information such as visual (e.g., figures, charts, tables, equations) and non-visual (e.g., audio, ADA accessible).	Accurate and appropriate display of quantitative information using academic vocabulary with correct symbols, units, scale, etc.	Mostly accurate and appropriate display of quantitative information. May contain minor errors in academic vocabulary, symbols, units, scale, etc.	Somewhat accurate and/or appropriate display of quantitative information. May contain major errors in academic vocabulary, symbols, units, scale, etc.	Inaccurate, inappropriate, or missing display of quantitative information. May contain major errors in academic vocabulary, symbols, units, scale, etc.
Quantitative Analysis Selection and use of analytical methods (e.g., data analysis, solution technique).	Appropriate and accurate selection and use of analytic methods.	Mostly appropriate and accurate selection and use of analytic methods.	Somewhat appropriate and/or somewhat accurate selection and use of analytic methods.	Inappropriate and inaccurate selection and use of analytic methods.

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Interpretation Description of the meaning of the results in the context of the original problem formulation.	Appropriate and comprehensive explanation of the results obtained from the quantitative analysis in the context of the original problem.	Mostly appropriate explanation of the results obtained from the quantitative analysis in the context of the original problem.	Somewhat appropriate explanation of the results obtained from the quantitative analysis. Explanation of the context is somewhat incorrect or incomplete.	Inappropriate, inadequate, or missing explanation of the results obtained from the quantitative analysis. Explanation of the context is incorrect or incomplete.
Implications Extension of potential application to broader contexts (e.g., predictive values, future directions, ramifications, clinical prognosis, professional and/or civic responsibilities).	Clearly identifies and explains substantive potential applications of the results and their broader impacts.	Adequately identifies and explains substantive potential applications of the results and their broader impacts.	Unclear or limited explanation of substantive potential applications of the results and their broader impacts.	Inappropriate or missing explanation of substantive potential applications of the results and their broader impacts.
Limitations Acknowledgement of and/or reflection on limitations in interpretation and implication that stem from underlying assumptions, data analysis procedures, methods used, and/or characteristics of the data itself (e.g., sample size, skewed, obvious bias).	Accurate and thorough articulation of deficiencies with the underlying data, analyses or conclusions.	Mostly accurate and/or mostly thorough articulation of deficiencies with the underlying data, analyses or conclusions.	Somewhat inaccurate and/or limited articulation of deficiencies with the underlying data, analyses or conclusions.	Inaccurate or missing articulation of deficiencies with the underlying data, analyses or conclusions.
Overall Communication Following a logical sequence and presenting an explicit chain of reasoning. Use of disciplinary terminology as appropriate.	Consistently clear and logical presentation throughout, using appropriate academic language.	Mostly clear and logical presentation; generally uses appropriate academic language.	Somewhat unclear or illogical presentation; may fail to use appropriate academic language.	Unclear or illogical presentation; fails to use appropriate academic language.

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