<div align="center">**MEMO (Second Reading)**</div>

To	UCC
From	Todd Eisworth, Chair
Subject	Quantitative Reasoning Courses in BRICKS
Date	November 8, 2022

This memo documents the effect on BRICKS of recent changes in the way in which the state handles quantitative courses in general education. It also proposes some policy changes to address the problems that have arisen. The goal is to construct a framework that will reconcile our current practice concerning quantitative reasoning courses with the Ohio Department of Higher Education (ODHE) implementation of Ohio Transfer 36 (OT-36).

Background

Quantitative reasoning is one of the Common Goals in place for all undergraduate degrees from Ohio University, and courses associated with this common goal appear in BRICKS in two places: Foundations Quantitative Reasoning (FQR) and Arches Constructed World (ACSW). Our current policy requires that courses fulfilling the Quantitative Reasoning requirement in BRICKS must be approved by OT-36, but recent changes at the state level have made this alignment more difficult.

ODHE Constraints

The Math, Stats, and Logic (MSL) portion of OT-36 is structured differently than the other disciplinary areas. Prior to May 2021, the category consisted of a generic category (TMMSL) together with several other narrowly prescribed categories that are analogous to the Transfer Assurance Guidelines (TAGs) in place for other disciplines. This conflation between TAGS and OT-36 at the state level has the following consequence:

- Quantitative OHIO courses with OT-36 approval in the same narrow MSL category MUST be treated as equivalent by our institution. Thus, PSY 1110 and MATH 1500 (both approved in the category TMM010 Basic Stats) must be treated as equivalent courses at OHIO.

This restriction is not in place for the so-called generic category of Math/Stats/Logic courses in OT-36 (denoted TMMSL), and so OHIO has several quantitative courses approved in this category. However, ODHE retired the TMMSL category for quantitative courses in March 2021, and this has consequences for our curriculum:

- Quantitative courses that are not currently in OT-36 cannot be approved for inclusion unless they fit into one of the specific categories (and are therefore counted as equivalent to all other courses in that specific category).

- Quantitative courses that are currently approved in the generic category TMMSL will be reviewed within the next five years, and those that do not fit into one of the narrow categories will be removed from OT-36.

The intent of ODHE is to limit the extent of introductory quantitative courses to a few standard categories that are tied to their guaranteed transfer pathways initiative. The desired outcome is to steer students away from quantitative courses that do not have a broad curricular function, as this will help minimize the chance of students having to take an additional unexpected quantitative course after transferring institutions. Since our general education program is tied to ODHE, there have been unintended consequences for BRICKS.

Local Issues

Our current policy is that courses fulfilling Quantitative Reasoning requirements in BRICKS must be approved as MSL courses at the state level. The retirement of the TMMSL category requires us to adjust this policy in the short term, primarily because ODHE has yet to draft learning outcomes for some of the standard courses used in general education. The specific problems are:

- We have courses that are currently approved for TMMSL, but which will not fit in any of the remaining categories. These courses are scheduled to lose OT-36 certification at some point in the next five years,

unless ODHE builds a corresponding category. PHIL 1200 (Principles of Reasoning) is the most prominent example of an OHIO course in this situation, although ODHE is currently building a suitable category.

- We have courses that were previously approved for one of the narrow MSL categories which have been removed because of the forced transfer equivalence. Thus, the basic statistics category TMM010 contains the OHIO courses MATH 1500 and PSY 1110, but MATH 2500 was removed from this category because it is not equivalent to the lower-level courses.

- We have courses that were contingently approved for BRICKS that cannot be submitted to OT-36 because TMMSL has been retired, and the courses do not fit one of the remaining categories.

Recommendations

Requiring all BRICKS quantitative reasoning courses to receive OT-36 approval is not feasible given that there are significant omissions in the available categories. At the same time, we should attempt to keep our alignment with the goals of ODHE for quantitative reasoning courses. To do this, we propose the following policies:

1. FQR courses should be restricted to OT-36 approved courses. An exception for PHIL 1200 is included as the ODHE is constructing an OT-36 category for such courses.
2. Only FQR courses can have PL1 (Placement Level 1) as a pre-requisite. [1]
3. There will be a local process for approving quantitative courses that satisfy the guidelines formerly governing the TMMSL category of OT-36. Courses approved in this matter must be in the ACSW component of BRICKS. A process is outlined below.
4. Quantitative courses in ACSW must have an FQR-level pre-requisite that can be bypassed by placement. To take such a course, a student will either need credit for an FQR course or have a math placement level of at least PL2. [2]
5. Courses that are approved as exceptions to the OT-36 requirement should undergo periodic review, with the same frequency as courses in the OT-36. If the structure of the OT-36 MSL category changes so that a matching category comes into existence, the course should be submitted to OT-36 as soon as the option becomes available.
6. OT-36 approved quantitative courses that lose this status as part of the state-level review cycle must subsequently be approved by our local process to maintain status in BRICKS.

Approval Process for Quantitative Courses in BRICKS

The process outlined below mirrors the appeal process in place for other areas of BRICKS and puts in place a mechanism that allows quantitative courses to achieve BRICKS approval as ACSW in situations where OT-36 approval is not an option.

- A course is considered eligible for inclusion in BRICKS as a quantitative reasoning course if:
  o the course meets the guidelines previously in place for the TMMSL category of OT-36 (Appendix A), and
  o the course meets the quantitative reasoning learning outcomes for BRICKS (Appendix B).
- An eligible course can be conditionally approved for inclusion in BRICKS through the standard curricular process.

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[1] Restricting the PL1 prerequisite to OT-36 approved courses in FQR ensures that the students of greatest concern to ODHE are funneled into quantitative courses that are tied to specific transfer pathways and which can potentially be supported by co-requisite courses. This honors the reasoning behind the restriction of OT-36 MSL courses to a few standard categories.

[2] Quantitative courses in the Arches can still satisfy FQR requirements if that is what the student needs. Thus, a PL2 student with no mathematics transfer credit can enroll in PSY 2110 and satisfy FQR, just as now. The student would need to satisfy the ACSW requirement through a humanities or arts class instead.

- A conditionally approved course that matches an OT-36 MSL category should be submitted to the state panel, and the normal curricular process (including any appeal) will be in place.
- A conditionally approved course that does NOT match an OT-36 MSL category must be evaluated by a faculty panel through a local process analogous to our appeal process. This will consist of the following steps:
  - The chair of UCC (University Curriculum Council) shall appoint a panel of three to five faculty members with expertise in mathematics, statistics, or logic. The chair of UCC shall also appoint one ad-hoc (non-voting) member from GEC or ICC (Individual Course Committee) to serve as the UCC advisor to the panel.
  - The department sponsoring the course should submit the following documents to the panel:
    - A narrative explaining how the course meets the eligibility requirements for inclusion as a quantitative course in BRICKS
    - Copies of course information from OCEAN
    - Sample syllabus
  - The faculty panel will review the submitted material, and a vote is taken on whether the course should be approved for inclusion in BRICKS based on the eligibility criteria in Appendix A and Appendix B.
  - A recommendation of *approval* of the course as an exception to the OT-36 requirement requires at least 2/3 of the panel to agree that the course meets the eligibility criteria. Otherwise, the recommendation of the panel is for *disapproval*.
  - Faculty panel recommendations will be submitted to GEC and ICC. Following this, ICC will submit recommendations to UCC at the next UCC meeting for a full UCC vote.

Appendix A: Ohio Transfer 36 Requirements

Ohio Transfer 36 Mathematics, Statistics, and Logic courses must satisfy the following:

Guidelines

- A credit-bearing, college-level course in Mathematics must use the standards required for high school graduation by the State of Ohio as a basis and must do at least one of the following: 1) broaden, or 2) deepen, or 3) extend the student's learning.

- The course does not cover variable learning outcomes from term to term.

- The course is not an upper-division course.

- The course is in the areas of mathematics, or statistics, or logic.

Excluded Courses

• Remedial or developmental courses, special topics courses, narrowly focused courses, technical or pre-technical courses and skills-based courses.

• Courses that focus exclusively on content coverage without addressing the learning outcomes for the Ohio Transfer 36.

• Career preparation courses, non-credit continuing education courses, and life experience courses (unless life experience credit, such as military training or other prior learning experience, becomes approved in the future for an Ohio Transfer 36 credit by the statewide faculty review panel).

Appendix B: BRICKS Quantitative Reasoning Outcomes

Consistent with AAC&U's (2009) VALUE rubrics, Ohio University defines quantitative reasoning as "a habit of mind, competency, and comfort in working with numerical data."

Individuals with strong quantitative reasoning skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

Courses, programs, or learning experiences designated as teaching quantitative reasoning will provide opportunities for learners to develop quantitative reasoning skills through the following course-embedded learning experiences.

- Learners will evaluate arguments in a logical fashion and develop competence in analysis and logical argument.

- Learners will develop and use the concepts of numeracy to investigate and explain quantitative relationships and solve problems in a variety of contexts.

- Learners will make decisions by analyzing mathematical models, including situations in which the student must recognize and/or make assumptions.

- Learners will use the language and structure appropriate to the subject matter to investigate, represent, make decisions, and draw conclusions.

Learning Outcomes

Courses, programs, or learning experiences designated as teaching quantitative reasoning will provide opportunities for learners to achieve the following six learning outcomes.

1. *Interpretation*. Students will be able to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).

2. *Representation*. Students will be able to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words).

3. *Calculation*. Students will be able to calculate relevant information using various mathematical formulas.

4. *Application / Analysis*. Students will be able to make judgments and draw appropriate conclusions based on the quantitative analysis of data while recognizing the limits of this analysis.

5. *Assumptions*. Students will be able to make and evaluate important assumptions in estimation, modeling, and data analysis.

6. *Communications*. Students will be able to express quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized).