Quality of Course Activities Rubric (#4)

The Math TLC is committed to developing courses in the master's program that includes activities that engage teachers in collectively analyzing, exploring and understanding culturally responsive mathematics pedagogy. In particular, as expressed in the Strategic Plan (Objectives 2.1, 2.2 & 2.3) the course development teams will jointly develop activities that engage teacher participants in "doing" mathematics that broadens their understanding of mathematics as a subject and a process by asking them to explore mathematics content outside the coursework they experienced as undergraduates. Additionally, the course instructor and other development team members will jointly develop activities that engage the teacher participants in broadening their exposure to mathematical ideas and in expanding their mathematical content knowledge in ways that deepen their understanding of topics that extend K-12 mathematics content.

A goal is that 90% of the teacher participants will self-report increased appreciation for mathematics and knowledge of how K-12 mathematics fits into the larger mathematical picture.

With this audience in mind, we develop activities that ask teachers to:

- Explore mathematics content outside the usual mathematics typically in programs that prepare secondary mathematics teachers.
- View mathematical ideas from the perspective of research mathematicians to help teachers appreciate the dynamic nature of mathematics as opposed to the static view offered in most secondary curricula.
- Experience interconnections between topics (e.g., look at symmetry from an algebraic perspective) to offset the separation of most secondary curriculum into algebra and geometry courses.
- Discover beauty, logical structure and applicability of mathematics.
- Relate to the historical and conceptual evolution of mathematics theory.

We also say that we will "deepen understanding of topics that extend K-12 mathematics." For this, we develop activities that ask teachers to explore:

- The theoretical underpinnings of traditional algorithms (e.g., division of fractions) and how these algorithms are specific examples of more general mathematical ideas (e.g., division rings).
- Ways content in secondary mathematics can be extended through the use of technology.
- How secondary mathematical concepts are generalized and extended to provide a broader perspective of secondary content (e.g., exploring parallelism in non-Euclidean.geometries).
- The applicability of mathematics in the real world so teachers can provide real answers when students ask "When will I ever use this?"

The following rubric is used by the Master's Program Team to determine the extent to which Course Development Teams were able meet these criteria.

Category	Advanced (4)	Proficient (3)	Developing (2)	Beginning (1)	Score
The activities engage	More than twelve	Nine to twelve occurrences,	Five to eight	Up to 4 occurances, or	
teacher/participants in	occurrences, or over	or between 50% to 75% of	occurrences, between	up to 25% of the	
"doing" mathematics	75% of the course's	the course's mathematical	25% and 50% of the	course's mathematical	
that broadens their	mathematical activities	activities that involves	course's mathematical	activities that involves	
understanding of	that involves	teacher/participants in	activities that involves	teacher/participants in	
mathematics (as a	teacher/participants in	"doing" mathematics,	teacher/participants in	"doing" mathematics,	
subject and as a process)	"doing" mathematics,	require participants to	"doing" mathematics,	require participants to	
and exposure to	require participants to	broaden their understanding	require participants to	broaden their	
mathematical ideas (vs.	broaden their	of mathematics (as a subject	broaden their	understanding of	
memorization or	understanding of	and as a process) and	understanding of	mathematics (as a	
computation only) by	mathematics (as a	exposure to mathematical	mathematics (as a	subject and as a process)	
asking them to explore	subject and as a process)	ideas (vs. memorization or	subject and as a process)	and exposure to	
mathematics content	and exposure to	computation only) by	and exposure to	mathematical ideas (vs.	
outside the coursework	mathematical ideas (vs.	asking them to explore	mathematical ideas (vs.	memorization or	
they experienced as	memorization or	mathematics content outside	memorization or	computation only) by	
undergraduates	computation only) by	the coursework addresses	computation only) by	asking them to explore	
	asking them to explore	mathematics content at a	asking them to explore	mathematics content	
	mathematics content	level above the	mathematics content	outside the coursework	
	outside the coursework	undergraduate level.	outside the coursework	addresses mathematics	
	addresses mathematics		addresses mathematics	content at a level above	
	content at a level above		content at a level above	the undergraduate level.	
	the undergraduate level.		the undergraduate level.		
The activities engage	At least six occurrences	Four to five occurrences, or	Two or three	One occurrence, or up to	
teacher/participants in	or over 50% of the	between 25% and 50% of	occurrences, or about	10% of the activities that	
expanding their	activities that engage	the activities that engage	10% of the activities that	engage	
mathematical content	teacher/participants in	teacher/participants in	engage	teacher/participants in	
knowledge in ways that	expanding their	expanding their	teacher/participants in	expanding their	
deepen their	mathematical content	mathematical content	expanding their	mathematical content	
understanding of topics	knowledge in ways that	knowledge in ways that	mathematical content	knowledge in ways that	
that extend K-12	deepen their	deepen their understanding	knowledge in ways that	deepen their	
mathematics content.	understanding of topics,	of topics, extend K-12	deepen their	understanding of topics,	
	extend K-12	mathematics content.	understanding of topics,	extend K-12	
	mathematics content.		extend K-12	mathematics content	
			mathematics content.		