THE ACADEMIC PREPARATION OF
FACULTY TEACHING MATHEMATICS
IN THE FIRST TWO YEARS OF COLLEGE

Position Statement of the American Mathematical
Association of Two-Year Colleges

Statement of Purpose

As the leading professional mathematics organization
that represents mathematics instruction in the first
two years of college, it is our responsibility to
promote the integrity of our profession and the
quality of mathematics instruction in the first two
years of college. This document is addressed to
college professionals involved in the staffing and
evaluation of mathematics programs for their
colleges, and to universities that prepare individuals
to teach mathematics in the first two years of college.
It is not intended to replace any regional, state, or
local requirements or recommendations that may
apply to hiring faculty, assigning them to classes, or
evaluating their performance or qualifications.
Rather, our goal is to provide guidelines that reflect
the collective wisdom and expertise of mathematics
educators throughout the United States and Canada
regarding appropriate preparation for college faculty
involved in the teaching of mathematics, whether on
a full-time or part-time basis.
We strongly recommend that only properly qualified personnel be permitted to teach mathematics. Many college students suffer from mathematics anxiety and core mathematical misconceptions at some level; this could be reinforced or exacerbated through poor mathematics instruction. Properly prepared faculty can positively impact students’ knowledge of, beliefs about, and attitudes toward mathematics. Individuals trained in other disciplines should have sufficient mathematical training prior to teaching mathematics courses. Moreover, individuals hired to teach mathematics at one level should not be permitted to teach at another level unless they possess appropriate credentials.

Guiding Principles

Two questions have guided the preparation of this report:

1. What are the characteristics of effective mathematics faculty?

2. How can these characteristics be fostered and extended through academic preparation and continuing professional development?

Effective faculty are reflective; they think about their teaching before they teach, while they teach, and after they teach. They are creative, resourceful, and
dedicated. They use a variety of methods and respond to the needs of the particular class and students they are teaching. Effective mathematics teachers are skilled questioners who encourage and challenge their students. They are clear and careful communicators who recognize the importance of language in mathematics, and of mathematics as language. They model the learning behaviors they wish their students to exhibit, especially through creative problem solving, exploration, and investigation. They are able to establish a positive and dynamic learning environment while maintaining student engagement.

Effective mathematics faculty have a breadth and depth of mathematical knowledge. They understand the interconnections among its various branches, as well as applications to other disciplines. They continually develop their knowledge and understanding of mathematics, teaching, and how students learn. They are independent learners who can adapt and contribute to changes in collegiate mathematics curriculum and instruction. Effective mathematics faculty are active professionals who promote and maintain collegial relationships and are contributing team members that mentor their colleagues. They belong to and participate in professional organizations, read journals, attend
professional meetings, and engage in other professional activities.

**Guidelines for Formal Preparation**

Mathematics curricula at colleges reflect diverse missions and needs. Examples include adult basic education to prepare students for a high school equivalency examination; developmental courses designed to prepare students for both STEM (Science, Technology, Engineering, and Mathematics) and non-STEM college-level courses; co-requisite courses, and college-level courses. Because of this diversity, the guidelines for the mathematical preparation of college faculty must be sufficiently robust to provide institutions flexibility in identifying qualified faculty. These guidelines, defined below, are divided into these parts: minimal preparation, standard preparation, related training and professional development.

**Definitions**

The term *faculty* is used to refer to persons who teach the first two years of post-secondary mathematics. No particular level within a ranking system is implied.

The phrase “mathematics in the first two years of college” refers to the mathematics content and
courses offered as part of the first two years of post-secondary education.

All full-time and part-time faculty should possess at least the qualifications listed under minimal preparation.

All full-time faculty should begin their careers with at least the qualifications listed under standard preparation.

**Minimal Preparation**

All full-time and part-time mathematics faculty should possess at least a master's degree in mathematics or in a related field with at least 18 semester hours (27 quarter hours) of graduate-level mathematics, applied mathematics and/or statistics courses, of which at least six of the 18 semester hours (nine quarter hours) are graduate-level mathematics. Course work in pedagogy is desirable.

**Standard Preparation**

All full-time mathematics faculty should begin their careers with at least a master's degree in mathematics or in a related field with at least 30 semester hours (45 quarter hours) of graduate-level mathematics or statistics, of which at least nine of the 30 semester hours (or 13.5 quarter hours) are in graduate-level
mathematics. In addition, they should have mathematics teaching experience at the secondary and/or post-secondary level. The teaching experience may be fulfilled through a program of supervised teaching, for example as a graduate student. A strong knowledge of calculus is considered to be a core standard. Statistics has become equally important; thus, a background in this area is desirable. Course work in pedagogy and in the philosophy of the community college is desirable.

Related Training

Courses in physics, engineering, and other fields may contain significant mathematical sciences content. Such course work should be taken into account by faculty hiring committees when evaluating a candidate's transcripts. Similarly, such courses should be carefully considered by university personnel when making program admission decisions and advising students who hold or may seek college mathematics teaching positions.

Professional Development

All mathematics faculty at colleges should continue their professional development throughout their careers. Appropriate continuing formal education
might include graduate course work in mathematics and mathematics education beyond the level of the individual's previous study; courses in some other disciplines served by the college mathematics curriculum might also be appropriate. In some instances advanced formal education may culminate in a doctorate in mathematics or mathematics education.

Effective mathematics faculty are active professionals. They read journals, attend professional meetings, and engage in other activities to continue their education. Professional organizations such as the American Mathematical Association of Two Year Colleges (AMATYC), the Mathematical Association of America (MAA), the National Council of Teachers of Mathematics (NCTM), and their affiliates provide opportunities for continued professional growth. They sponsor conferences, webinars, workshops, mini-courses, summer institutes, etc. that address many of the mathematical and pedagogical topics intrinsic to quality mathematics instruction in the first two years of college. Participation by faculty is critical for keeping up-to-date in their fields.

**Evaluating Credentials and Staffing**

Specialized knowledge and judgment is required to evaluate a candidate's credentials. For this reason,
faculty hiring committees should consist primarily of full-time mathematics faculty. All staffing decisions related to mathematics instruction – whether full-time or part-time – should be made by content specialists.

**Adjunct Faculty**

Adjunct faculty should possess the same level of preparation and commitment to quality teaching as full-time faculty. The AMATYC position statement entitled *Best Practices in Employment of Adjunct Faculty* stresses the need for institutional support for professional development for adjunct faculty.

**Academic Support Personnel**

As colleges have increased their support for student success, the “mathematics lab” has become ubiquitous. The expertise of individuals offering support varies widely. Because the aid offered is often specific to certain levels of mathematics, the academic preparation required of support personnel may be less than that of faculty. However, it is critical that individuals offering tutoring support in these situations have accomplished course work above the level that they are tutoring, and that these individuals are supervised by qualified mathematics faculty.

**Variety of Expertise**
A mathematics department should be composed of individuals who possess complementary strengths and areas of expertise. This is especially true in a college with a wide variety of degree programs. A mathematics department with experts or specialists in pedagogy, statistics, computing, applied mathematics, analysis, and pure mathematics is manifestly stronger than one in which all members have similar academic backgrounds. This, together with program-related needs and candidate qualifications, should be considered when seeking and hiring full-time and part-time faculty.

This position statement is a revision of Guidelines for the Academic Preparation of Mathematics Faculty at Two-Year Colleges, which was adopted by AMATYC in 1993. Approved by the Delegate Assembly, November 15, 2014.