

1 **THE ACADEMIC PREPARATION OF**
2 **FACULTY TEACHING MATHEMATICS**
3 **IN THE FIRST TWO YEARS OF COLLEGE**

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

6 **Statement of Purpose**

7 As the leading professional mathematics organization
8 that represents mathematics instruction in the first
9 two years of college, it is our responsibility to
10 promote the integrity of our profession and the
11 quality of mathematics instruction in the first two
12 years of college. This document is addressed to
13 college professionals involved in the staffing and
14 evaluation of mathematics programs for their
15 colleges, and to universities that prepare individuals
16 to teach mathematics in the first two years of college.
17 It is not intended to replace any regional, state, or
18 local requirements or recommendations that may
19 apply to hiring faculty, assigning them to classes, or
20 evaluating their performance or qualifications.
21 Rather, our goal is to provide guidelines that reflect
22 the collective wisdom and expertise of mathematics
23 educators throughout the United States and Canada
24 regarding appropriate preparation for college faculty
25 involved in the teaching of mathematics, whether on
26 a full-time or part-time basis.

27 We strongly recommend that only properly qualified
28 personnel be permitted to teach mathematics. Many
29 college students suffer from mathematics anxiety and
30 core mathematical misconceptions at some level; this
31 could be reinforced or exacerbated through poor
32 mathematics instruction. Properly prepared faculty
33 can positively impact students' knowledge of, beliefs
34 about, and attitudes toward mathematics. Individuals
35 trained in other disciplines should have sufficient
36 mathematical training prior to teaching mathematics
37 courses. Moreover, individuals hired to teach
38 mathematics at one level should not be permitted to
39 teach at another level unless they possess appropriate
40 credentials.

41 **Guiding Principles**

42 Two questions have guided the preparation of this
43 report:

- 44 1. What are the characteristics of effective
45 mathematics faculty?
- 46 2. How can these characteristics be fostered and
47 extended through academic preparation and
48 continuing professional development?

49 Effective faculty are reflective; they think about their
50 teaching before they teach, while they teach, and
51 after they teach. They are creative, resourceful, and

52 dedicated. They use a variety of methods and respond
53 to the needs of the particular class and students they
54 are teaching. Effective mathematics teachers are
55 skilled questioners who encourage and challenge
56 their students. They are clear and careful
57 communicators who recognize the importance of
58 language in mathematics, and of mathematics as
59 language. They model the learning behaviors they
60 wish their students to exhibit, especially through
61 creative problem solving, exploration, and
62 investigation. They are able to establish a positive
63 and dynamic learning environment while maintaining
64 student engagement.

65 Effective mathematics faculty have a breadth and
66 depth of mathematical knowledge. They understand
67 the interconnections among its various branches, as
68 well as applications to other disciplines. They
69 continually develop their knowledge and
70 understanding of mathematics, teaching, and how
71 students learn. They are independent learners who
72 can adapt and contribute to changes in collegiate
73 mathematics curriculum and instruction. Effective
74 mathematics faculty are active professionals who
75 promote and maintain collegial relationships and are
76 contributing team members that mentor their
77 colleagues. They belong to and participate in
78 professional organizations, read journals, attend

79 professional meetings, and engage in other
80 professional activities.

81 **Guidelines for Formal Preparation**

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

97 **Definitions**

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

102 The phrase “mathematics in the first two years of
103 college” refers to the mathematics content and

104 courses offered as part of the first two years of post-
105 secondary education.

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

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

112 **Minimal Preparation**

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

121 **Standard Preparation**

122 All full-time mathematics faculty should begin their
123 careers with at least a master's degree in mathematics
124 or in a related field with at least 30 semester hours
125 (45 quarter hours) of graduate-level mathematics or
126 statistics, of which at least nine of the 30 semester
127 hours (or 13.5 quarter hours) are in graduate-level

128 mathematics. In addition, they should have
129 mathematics teaching experience at the secondary
130 and/or post-secondary level. The teaching experience
131 may be fulfilled through a program of supervised
132 teaching, for example as a graduate student. A strong
133 knowledge of calculus is considered to be a core
134 standard. Statistics has become equally important;
135 thus, a background in this area is desirable. Course
136 work in pedagogy and in the philosophy of the
137 community college is desirable.

138 **Related Training**

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

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149 **Professional Development**

150 All mathematics faculty at colleges should continue
151 their professional development throughout their
152 careers. Appropriate continuing formal education

153 might include graduate course work in mathematics
154 and mathematics education beyond the level of the
155 individual's previous study; courses in some other
156 disciplines served by the college mathematics
157 curriculum might also be appropriate. In some
158 instances advanced formal education may culminate
159 in a doctorate in mathematics or mathematics
160 education.

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

176 **Evaluating Credentials and Staffing**

177 Specialized knowledge and judgment is required to
178 evaluate a candidate's credentials. For this reason,

179 faculty hiring committees should consist primarily of
180 full-time mathematics faculty. All staffing decisions
181 related to mathematics instruction – whether full-time
182 or part-time – should be made by content specialists.

183 **Adjunct Faculty**

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

190 **Academic Support Personnel**

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

203 **Variety of Expertise**

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

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

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