AMATYC
American Mathematical Association of Two-Year Colleges

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October 18, 2023

Dear AMATYC Delegate.

The 2023 Delegate Assembly will be held on **Saturday, November 18th, 2023, 3:00 - 5:00 PM EST, 2:00pm to 4:00pm CST, 1:00pm to 3:00pm MST, 12:00 pm to 2:00pm PST** virtually using the Zoom platform.

Attached are the 2023 Delegate Assembly Agenda and other materials for your careful review prior to our meeting. Please plan to arrive early to the meeting, check in with your regional vice president, and **be in Zoom 30 minutes before the scheduled start time**. You will access a Regional Zoom Link to check in, and then access a different Zoom link for the Delegate Assembly. The Delegate Assembly will start on the hour, so please check into your Zoom room at least ten minutes prior to the start of the Delegate Assembly. Be sure to have access to the attached packet of information during the Delegate Assembly.

This year the main items of business are reviewing reports from the President, the Treasurer, the Foundation, and updates to the AMATYC Standards.

Substitutes: According to the Bylaws, alternate delegates may be named by the regional vice president as the delegate replacing an affiliate or state/province delegate at the Delegate Assembly by notifying the AMATYC Secretary in writing and providing appropriate credentials in writing no later than 6 pm of the day prior to the start of the Delegate Assembly.

Motions: If you wish to submit a motion for consideration during the Delegate Assembly business meeting, please submit at this Smartsheet. Please submit the motion to me in advance of the Delegate Assembly meeting by email at laura.watkins@amatyc.org

Items for Discussion: As in previous years, the Delegate Assembly agenda includes open discussion at the end of the meeting. To the extent that time permits, this is an opportunity for delegates to express comments about issues related to AMATYC's mission.

Thank you very much for your service to AMATYC in this important role. I am looking forward to seeing you on Zoom.

Respectfully,

Laura Watkins
President

2023 DELEGATE ASSEMBLY

AGENDA
THE AMERICAN MATHEMATICAL ASSOCIATION OF TWO-YEAR COLLEGES
Virtual
Saturday, November 18, 2023
3:00 pm EST

I. Call to Order – 3:00 p.m. EST

II. Welcome and Introductions
Parliamentarian and Timekeeper
2022-2023 Executive Board Members

III. Announcement of Quorum Nancy Rivers

IV. Motion to Approve the Rules of Conduct

V. Motion to Approve the Agenda

VI. Motion to Approve the 2023 Minutes Review Committee

VII. 2022 Delegate Assembly Minutes (Informational item only)

VIII. Reports

A. President — Laura Watkins
B. Treasurer — Barbra Steinhurst
C. AMATYC Foundation — Kathryn Kozak
D. Strategic Planning — George Hurlburt
E. Conference Site Selection — George Hurlburt

X. Old Business

A. Placement and Assessment Committee: *Initial Placement of Students into the Mathematics Curriculum Position Statement* is currently being revised on the Standard Timeline.

XI. New Business

A. Motion for Content Standards Update
B. Motion for Intellectual Development Standards Update
C. Motion for Pedagogy Standards Update

XII. Items for Discussion – Open Microphone

Delegates are invited to bring forward for discussion or comments issues that are related to AMATYC's mission and goals.

XIII. Announcements

XIV. Adjournment

AMATYC Mission, Vision, Values

AMATYC Mission Statement: The American Mathematical Association of Two-Year Colleges (AMATYC) mission is to provide high quality professional development, to advocate and collaborate at all levels, and to build communities of learners for all involved in mathematics education in the first two years of college. (Adopted by the Board on April 1, 2016)

AMATYC's Vision: To be the leading voice and resource for excellence in mathematics education in the first two years of college. (Adopted by the Board on April 1, 2016)

AMATYC's Tagline: *Opening Doors Through Mathematics* (Adopted by the Board on June, 2016)

AMATYC's Core Values

Core Values represent core priorities, traits, or qualities in the organization's culture that are considered worthwhile. They are timeless and unchanging. (Alphabetical Order, Approved May 2006)

Core Value:	Operational Definition:
Academic Excellence	Presenting a quality educational experience in mathematics that is responsive to the needs of all students while recognizing student achievement in mathematics as an essential life goal.
Access	Acknowledging the right of all students to experience learning mathematics in ways that maximize their individual potential.
Collegiality	Providing opportunities for networking and encouraging mutual respect for other mathematics professionals for the betterment of the mathematics teaching profession.
Innovation	Creating, developing, implementing, and redefining successful instructional strategies, curricula in mathematics, and classroom practices based on the research of how students best learn mathematics and how faculty best teach mathematics.
Integrity	Safeguarding the qualities of honesty, sincerity, trustworthiness, global consciousness, and a code of sound moral professional principles.
Professional Development	Building expertise and exhibiting leadership in the teaching and learning of mathematics, enhancing personal growth, and improving teaching methods and effectiveness as a personally initiated life-long responsibility.
Teaching Excellence	Designing and implementing a dynamic mathematics curriculum, promoting the use of innovative and effective teaching strategies, assessing student learning outcomes in mathematics with appropriate methods, and creating a successful learning environment for all students.

2018-2023 AMATYC Strategic Plan

Approved April 21, 2017

AMATYC will be guided during the years 2018-2023 by this strategic plan consisting of the five priorities below and accompanying initiatives.

Priority I: Advocate for mathematics educators and mathematics students.

A. Expand the visibility of AMATYC.
B. Further a common vision by strengthening collaborations with other organizations.
C. Recruit and retain individuals from under-represented groups into AMATYC membership and leadership.
D. Attract and retain students into mathematics intensive fields, particularly students from under-represented groups.
E. Advance seamless course and program articulation.
F. Develop and maintain standards for mathematics education in the first two years of college.
G. Educate the public on the AMATYC IMPACT standards and other AMATYC or national initiatives.

Priority II: Provide and promote professional development opportunities to faculty whose primary focus is mathematics in the first two years of college.

A. Create year-round AMATYC opportunities for professional development utilizing various modalities.
B. Offer professional development focused on mentoring new faculty teaching mathematics in the first two years of college.
C. Enhance access to high quality professional development for all mathematics faculty.
D. Collaborate with other organizations to provide professional development opportunities.

Priority III: Promote research on the teaching and learning of mathematics and statistics in the first two years of college.

A. Encourage qualitative and quantitative research focused on student learning for a diverse range of learners**.**
B. Train and support faculty who are interested in conducting research and classroom research.
C. Pursue grants and other means of financial support for classroom research on teaching and learning.
D. Continue to improve instructional resources based on classroom research.
E. Advocate for the continued improvement of placement processes based on program assessment.
F. Assist faculty, departments, and colleges to institute innovative practices informed by research.
G. Disseminate resources and model practices for research-based teaching and learning.

Priority IV: Improve mathematics and statistics curricula in the first two years of college.

A. Seek to provide a strong and relevant mathematics curricular experience for all students.
B. Design and refine pathways for both STEM (Science, Technology, Engineering, and Mathematics) and non-STEM students.
C. Promote the appropriate instruction and assessment of curricula.
D. Encourage the appropriate use of technologies to enhance student learning.
E. Facilitate the communication of successful curricular innovations that improve student learning.

Priority V: Build connections within communities of educators across regions, departments, and institutions.

A. Enrich relationships with and provide support for AMATYC affiliate organizations.
B. Support and increase participation in AMATYC's academic committees and AMATYC networks (ANets).
C. Extend opportunities for local, national, and international networking to those interested in mathematics in the first two years of college.
D. Promote a diverse community of mathematics educators which recognizes and welcomes the unique contributions of all participants.

BYLAWS OF THE

AMERICAN MATHEMATICAL ASSOCIATION OF TWO-YEAR COLLEGES (AMATYC)

Ratified July 2010

Last Updated November 2021

Article I Name

The name of the association shall be the American Mathematical Association of Two-Year Colleges, Incorporated (AMATYC).

Article II Objectives

Section 1 The American Mathematical Association of Two-Year Colleges, Incorporated is a non-profit, educational association.

Section 2 The objectives of AMATYC are the following:

A. Encourage the development of effective mathematics programs

B. Provide a national forum for the exchange of ideas

C. Develop and/or improve the mathematics education and mathematics related experiences of students in two-year colleges

D. Coordinate activities of affiliated organizations on the national level

E. Promote the professional welfare and development of its members.

Article III Membership

Section 1 Membership Categories

Members must complete the proper forms and pay the established dues. Membership in AMATYC shall be restricted to the following:

A. Regular membership: individual, full-voting members, with one or several subcategories determined by the Executive Board, with dues and levels of benefits determined by the Executive Board.

B. Associate membership: individual, non-voting members, with one or several subcategories determined by the Executive Board, with dues and levels of benefits determined by the Executive Board. Associate members must not also be a full- or part-time teacher, and must be endorsed by a regular member.

C. Institutional membership – A class of non-individual, non-voting memberships

associated with any college, university, learning center, publisher, manufacturer, or similar entity that supports the purposes of the association. Dues and levels of benefits determined by the Executive Board.

Section 2 Membership Privileges

A. A regular member has the right to vote, hold elected office, be appointed to leadership positions, nominate candidates for office, serve on committees as a voting member, and be appointed as a delegate in the Delegate Assembly.

B. Associate members have the right to nominate candidates for office and serve on committees, but do not have the right to vote, hold elected office, be appointed to leadership positions, or be appointed as a delegate in the Delegate Assembly.

C. Individuals who are eligible for an associate membership may choose to complete the proper forms and pay the established dues to become a regular member to obtain all the privileges of a regular member.

D. The representative of an institutional member has the right to nominate candidates for office, but does not have the right to vote, hold elected office, be appointed to leadership positions, serve on committees as a voting member, or be appointed as a delegate in the Delegate Assembly, unless that individual is also a regular member of the association.

Section 3 Membership Year

The membership year shall consist of twelve months. For new members, the membership beginning date shall be the day the dues are paid.

Section 4 Dues

A. Annual membership dues are paid by all members, except lifetime members.

B. Annual regular AMATYC membership dues are set every two years by applying the Consumer Price Index - Urban Consumers CPI-U for the last two consecutive years that begin with an even-numbered year to the current dues and rounding up to the nearest whole dollar. This adjusted rate is set at the Spring Executive Board Meeting in odd- numbered years, with the change taking place on July 1 of the following even-numbered year.

C. In the event that there is a need for a change other than the calculated rate, as determined in Article III.4.B., the new rate must be brought to the Delegate Assembly prior to the change taking effect for approval.

Article IV Affiliated Organizations

Section 1 Any organization interested in affiliating with AMATYC must recognize AMATYC as a prime national organization concerned with the first two years of college mathematics instruction. This is done by voting for affiliation with AMATYC. Applications for affiliation must be approved by the AMATYC Executive Board.

Section 2 An affiliated organization has the following responsibilities:

A. The membership lists of the organization shall be forwarded to the appropriate AMATYC Regional Vice-President by June 30 in even-numbered years.

B. Membership in AMATYC should be encouraged for all the affiliate's members.

C. Each affiliate organization will appoint AMATYC members to serve as affiliate delegates to the Delegate Assembly as discussed in Article VII.

Article V Elected Officers

Section 1 The elected officers of AMATYC shall be called the Executive Board and shall be the national officers: a President, President-Elect, Immediate Past President, Treasurer, and Secretary, and the regional officers, a Northeast Regional Vice-President, Mid-Atlantic Regional Vice-President, Southeast Regional Vice-President, Midwest Regional Vice- President, Central Regional Vice-President, Southwest Regional Vice-President, Northwest Regional Vice-President, and West Regional Vice-President.

Section 2 Only regular members are eligible to hold elected office.

Section 3 Terms of Office

A. The term of office for all elected officers, except for the Treasurer, is two years; beginning on January 1 in even-numbered years and ending on December 31 in the next odd-numbered year. The term limit for all officers, except for the President-Elect, President, Immediate Past President, and Treasurer, is three full successive elected terms in the same office.

B. The term limit for the President-Elect, President, and Immediate Past President is one full elected term in the same office. The President-Elect automatically succeeds the President at the end of the President's term or when the President leaves office permanently. The President automatically succeeds the Immediate Past President at the end of the President’s term. The Immediate Past President may not be elected as President- Elect.

C. The term of the office for the Treasurer is four years, beginning on January 1 in even-numbered years and ending on December 31 in the second subsequent odd-numbered year. The term limit for the Treasurer is two full successive elected terms in that office.

Section 4 Duties of elected officers

All elected officers shall promote and coordinate the activities of the association, perform all duties according to policy, and perform all other duties that regularly pertain to the office. Specific duties of each office are as follows:

A. President:

1. Prepare the agenda for all association, Delegate Assembly, and Executive Board meetings.

2. Preside at all general meetings of the association, the Delegate Assembly, and the Executive Board.

3. Act as ex-officio member of all committees except the Nominating Committee.

4. Nominate, for approval by the Executive Board, the chairperson of all committees, except the Nominating Committee, Strategic Planning Committee, and Organizational Assessment Committee.

5. Appoint the chairs of ad hoc committees and task forces.

6. Appoint an acting chairperson of a committee when a vacancy occurs.

7. Appoint Special Appointees to perform duties as designated with approval of the Executive Board.

8. Meet with the Executive Directors and/or Presidents of other organizations who share similar concerns and interests to discuss items of mutual benefit and to establish a working relationship with them.

B. President-Elect

1. Act as president in the absence of the President.

2. Serve as the chairperson of the Strategic Planning Committee and the Organizational Assessment Committee.

3. Maintain a policy and procedures manual in conjunction with the Secretary and the AMATYC Office.

C. Immediate Past President

1. Chair the Nominating Committee.

2. Administer the election of officers.

D. Secretary

1. Keep an accurate, permanent record of the proceedings of meetings of the association, Delegate Assembly, and Executive Board.

2. Maintain updated lists of delegates and affiliate presidents.

3. Furnish agendas and minutes of all meetings to the appropriate people and ensure that the official minutes of the organization are securely archived.

4. Assist the President-Elect in maintaining a policy and procedures manual.

E. Treasurer

1. Ensure that all financial records, funds, receipts, and disbursements of the association are accurately maintained.

2. Present a written financial report at each regular business meeting and each Executive Board meeting.

3. Certify the size of the membership by region and category.

4. Prepare an annual organizational budget and present it to the Executive Board for approval at the fall meeting.

5. Obtain approval of the Executive Board or designee for expenditures that exceed budgeted amounts.

6. The outgoing Treasurer will complete the financial responsibilities pertaining to the conference at the end of the term of office.

F. Regional Vice-Presidents

1. Serve as the liaison between AMATYC and its affiliated organizations.

2. Appoint state/province delegates per Article VII.

3. Serve as a member of the membership committee. One Regional Vice-President shall serve as chair.

4. Recruit and retain members within their regions.

Section 5 Elections

The Executive Board shall conduct elections for officers in each odd-numbered year. Each regular member as of June 30 of that year shall be eligible to vote. Elections shall be by secret ballot. Announcement of the dates, format, and candidates of the election shall be made in writing or electronically to the membership at least 30 days prior to the beginning of the vote. Candidates who receive a plurality of the votes for a particular office shall be elected. If the number of votes for two candidates for the same office are tied, then a random

process shall be used to determine the winner.

Section 6 Vacancies

In the event that an officer other than the President, President-Elect, or Treasurer leaves office before the expiration of the regular term, the president, with the approval of the Executive Board, shall appoint a replacement for the remainder of the term. A vacancy in the office of President-Elect shall be filled by a special election following procedures established by the Executive Board. In the event that the Treasurer leaves office before the expiration of the regular term, the President, with the approval of the Executive Board, shall appoint a replacement until the next regularly scheduled election, regardless of whether this election falls on the four-year cycle for election of a Treasurer. The newly elected Treasurer would serve a full four-year term and this four-year term will form the basis for future Treasurer terms and elections.

Article VI Executive Board

Section 1 The elected officers shall serve as the Executive Board and are responsible for conducting the affairs of the association.

Section 2 Duties of the Executive Board

A. Approve the chairperson of each committee, except the Nominating Committee, Strategic Planning Committee, Organizational Assessment Committee, ad hoc committees, and task forces.

B. Recommend dues changes to the Delegate Assembly per Article III.4.

C. Recommend bylaw changes to the Delegate Assembly.

D. Select cities and dates for the annual conference.

E. Approve the annual budget.

F. Appoint special committees as needed to carry out the purposes of the association.

G. Make special appointments for persons to perform duties as designated.

H. Authorize a designated officer or officers, agent or agents of AMATYC, in addition to the officers so authorized by these bylaws, to implement and oversee, on behalf of AMATYC, a project, program or activity conducted jointly by AMATYC and one or more outside entities, to be called a partnership. This partnership is approved by the AMATYC Executive Board. Such authority must be in writing and be confined to specific instances as outlined in a partnership agreement which is approved by the Executive Board and signed by AMATYC and the partnership entity.

I. Perform all other duties according to policy.

J. Perform all other duties that are necessary for the functioning of the association.

Section 3 A majority of the members of the Executive Board shall constitute a quorum to enact the business of AMATYC. This majority must include at least two of the national officers.

Section 4 Regular meetings of the Executive Board may be called by the President or seven members of the Executive Board two of which must be national officers. Written or electronic notification of all regular meetings must be given to all Executive Board members at least 30 days prior to the start of the meeting. Announcements of regular Executive Board meetings must be published on the AMATYC website at least two weeks prior to the beginning of the meeting. At least two regular meetings must be held annually, one during the spring and a second during the fall.

Section 5 Action between Regular Meetings

A. In circumstances as determined by the President or seven members of the Executive Board, at least two of which are national officers, business may be conducted between regular meetings of the Executive Board by means of mail, fax, email or conference calls. The same quorum that applies to regular meetings is required at these meetings to conduct the business of AMATYC.

B. All actions resulting from a mail, fax, email or conference call vote shall be documented, distributed, and archived by means of a report from the Secretary in the Executive Board minutes of the regular meeting that takes place immediately following the action.

C. Written or electronic notification of all proposed actions presented between regular meetings must be given to all Executive Board members at least 72 hours before discussion or voting occurs.

Article VII Delegate Assembly

Section 1 The association shall have an annual business meeting (Delegate Assembly) in conjunction with its annual conference. Notice of the Delegate Assembly meeting shall be publicized in writing or electronically at least one month in advance.

Section 2 The Delegate Assembly shall be composed of delegates who are regular members of AMATYC as follows:

A. State/Province Delegates

1. There shall be two state/province delegates from each state and province, appointed for a term of two years by the appropriate regional vice president. States and provinces with more than 50 regular individual members of AMATYC, are permitted one additional state/province delegate for each 50 regular individual members of AMATYC or fraction thereof above 50, determined by each member's preferred mailing address. The count of regular individual members of AMATYC will be done on June 30 of even-numbered years.

2. Terms of state/province delegates shall commence on July 1, or date of appointment, whichever is later, and terminate on June 30, in odd-numbered years.

3. An alternate delegate from the same state/province may be appointed to serve as proxy in place of a state/province delegate who is unable to attend the Delegate Assembly.

B. Affiliate Delegates

1. Each affiliate president, who is also a regular AMATYC member, in office at the time of the Delegate Assembly is a delegate to the Delegate Assembly to represent their affiliate organization. A proxy cannot replace an affiliate president delegate.

2. Each affiliate organization may appoint one additional affiliate delegate. Term of appointment will be determined by the affiliate.

3. An alternate delegate from the same affiliate may be appointed to serve as proxy in place of an affiliate delegate who is unable to attend the Delegate Assembly.

C. Each Executive Board officer is a delegate.

D. Each AMATYC past president is a delegate.

E. Each AMATYC academic committee chair is a delegate.

F. Additional delegates to represent countries not specified in Section XI may be appointed by the Executive Board.

G. No delegate at the Delegate Assembly is entitled to more than one vote.

H. Regional Vice-Presidents shall submit a list of affiliate and state/province delegates to the AMATYC Secretary no later than thirty (30) days prior to the start of the Delegate Assembly.

I. Alternate Delegates may be named by the Regional Vice-President as the delegate replacing an affiliate or state/province delegate at the Delegate Assembly, by notifying the AMATYC Secretary in writing and providing appropriate credentials in writing no later than 6 pm of the day prior to the start of the Delegate Assembly.

Section 3 The Delegate Assembly's responsibilities are to:

A. Vote on all dues changes as submitted by the Executive Board, in accordance with Article III.4.C.

B. Vote on bylaw changes submitted to the Delegate Assembly.

C. Present written recommendations to the Executive Board to be considered at the following Executive Board meeting.

D. Approve position statements as presented by the Executive Board per Article IX.

Section 4 Each state/province delegate shall perform the following duties:

A. Represent that delegate's state/province at the Delegate Assembly meeting at the annual conference.

B. Keep the Regional Vice-President abreast of the activities and concerns of members from the delegate's state.

C. Assist the Regional Vice-President in promoting membership and activities for AMATYC in the state/province.

D. Perform all duties according to policy.

Section 5 Each affiliate delegate shall perform the following duties:

A. Represent the affiliate organization at the Delegate Assembly meeting at the annual conference.

B. Keep the Regional Vice-President abreast of the activities and concerns of members from the delegate's affiliate.

C. Assist the Regional Vice-President in promoting membership and activities for AMATYC at the affiliate meetings.

D. Perform all duties according to policy.

Section 6 The number of delegates necessary for a quorum in the Delegate Assembly shall be twenty-five (25) percent of the number of delegates identified in Section 2 of this Article.

Article VIII Committees

Section 1 Types of committees

A. Committees fall into three general categories: Administrative Committees, Academic Committees, and Ad Hoc Committees and Task Forces. Administrative and academic committees are standing committees.

B. All members of association committees must be AMATYC members. Non-AMATYC members may participate in academic committee work in a nonvoting capacity.

Section 2 Administrative Committees

A. Purpose

Administrative committees support the general functioning of the association.

B. Established administrative committees

The following administrative committees are established by these bylaws.

1. Nominating Committee
2. Membership Committee
3. Strategic Planning Committee
4. Finance Committee
5. Foundation Board
6. Organizational Assessment Committee
7. Professional Development Committee

C. Objectives of the established administrative committees

The general objectives of each of the committees in part B are the following:

1. The Nominating Committee shall establish election procedures and, consistent with policy and Executive Board direction, recommend a slate of nominees for Executive Board approval.
2. The Membership Committee shall develop and implement strategies to solicit new members and retain existing members.
3. The Strategic Planning Committee shall develop and publish the AMATYC Strategic Plan.
4. The Finance Committee oversees the budget development and serves in an advisory capacity to the Treasurer and Executive Board.
5. The Foundation Board shall raise and disburse funds to support the mission of AMATYC.
6. The Organizational Assessment Committee shall coordinate the planning and implementation of assessment of AMATYC programs and activities.

7. The Professional Development Committee shall monitor, coordinate, and evaluate AMATYC's professional development efforts in order to provide the membership with high quality opportunities and a wide breadth of activities.

D. Other Administrative Committees

Other administrative committees may be created and discharged as needed by the Executive Board to support the general functioning of the association.

Section 3 Academic Committees

A. Purpose

Academic committees support the general professional purposes and mission of the association, as stated in Article II and in the association's mission statement.

B. Establishment of academic committees

Academic committees are established and discharged by the Executive Board. Their designations and specific purposes will change as the needs of the association change. Each academic committee shall have a chair, nominated by the President and approved by the Executive Board.

C. Duties of an Academic Committee Chairperson

The chairperson of each academic committee shall perform the following duties:

1. Chair the meetings of the academic committee.

2. Coordinate the activities of the academic committee.

3. Prepare the annual budget of the academic committee and submit it to the Treasurer according to the established schedule.

4. Prepare reports of the academic committee's activities and submit them to the President according to the established schedule.

5. Perform all duties according to policy.

6. Perform all other duties necessary for the academic committee to function and accomplish its goals.

Section 4 Ad Hoc Committees and Task Forces

A. Establishment

Ad hoc committees and task forces may be approved and formed by the Executive Board and/or Delegate Assembly when deemed necessary by those entities.

B. Purpose and duration

The purpose of ad hoc committees and task forces shall be determined when they are established. A termination date shall be designated at the time of establishment.

Article IX Position Statements

Section 1 Purpose of Position Statements

Position statements represent a declaration by the organization on issues of interest to two- year college mathematics educators, and may be initiated by an academic committee, an affiliate organization, or an individual AMATYC member.

Section 2 Process for Development of Position Statements

The process for development of a position statement must conform to the following guidelines.

A. A proposal for a position statement must be referred to, or begin with, an appropriate academic committee or task force created by the Executive Board. That committee or task force chooses to pursue or not to pursue the statement. The committee or task force is responsible for development of a proposed position statement.

B. A schedule for the process of review of proposed position statements by committees, Executive Board, and Delegate Assembly, shall be established by the Executive Board. This schedule must provide timely notice to all AMATYC members of the proposed statement.

C. The chairperson of an academic committee or task force shall submit the draft position statement to the Executive Board for its review and approval.

D. If endorsed by the Executive Board the proposed position statement shall be submitted to the Delegate Assembly for review and approval.

E. In the absence of Executive Board endorsement, the Delegate Assembly may vote to review a proposed position statement by a vote of 2/3 of the delegates at the Delegate Assembly, provided that timely notice was provided to all AMATYC members.

F. If approved by the Delegate Assembly the proposal becomes an AMATYC position statement.

Article X Removal From Office

Section 1 Executive Board members may be removed from office by a 3/4 vote of the Executive Board, with or without cause, if the action is deemed to be in the

best interest of the association.

Section 2 Persons appointed to positions within the association may be removed from those positions by a 2/3 vote of the Executive Board.

Section 3 The affirmative vote of the Executive Board for removal of a person from an appointed or elected position is an authorization for the President to take the steps necessary for that removal.

Article XI AMATYC Regions

Section 1 The AMATYC organizational membership shall be divided into the regions as follows:

Region 1 – Northeast:
Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont; New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, Quebec

Region 2 – Mid-Atlantic:
Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania, Virginia, West Virginia

Region 3 – Southeast:
Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee; Puerto Rico, Virgin Islands and other Caribbean Islands

Region 4 – Midwest:
Illinois, Indiana, Kentucky, Michigan, Ohio, Wisconsin

Region 5 – Central:

Colorado, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; Manitoba, Saskatchewan

Region 6 – Southwest:
Arizona, Arkansas, New Mexico, Oklahoma, Texas; Mexico

Region 7 – Northwest:
Alaska, Idaho, Montana, Oregon, Washington, Wyoming; Alberta, British Columbia, Northwest Territories, Nunavut, Yukon Territory, other International Locations

Region 8 – West:
California, Hawaii, Nevada, Utah; Pacific Islands

Section 2 A member’s region is determined by the location of the individual's primary professional contributions related to AMATYC's objectives (Article II).

Article XII Parliamentary Authority

The rules contained in the current edition of Robert's Rules of Order, Newly Revised shall govern AMATYC in all cases in which they are applicable and in which they are not inconsistent with these bylaws.

Article XIII Amendment

These bylaws may be amended by the delegates at the Annual Delegate Assembly by a two- thirds (2/3) vote of those delegates voting, provided that written or electronic notification of the proposed text changes and the clear purpose of the amendment has been sent to all delegates at least thirty (30) days prior to the Delegate Assembly and a hearing on the proposed changes is convened no sooner than ten (10) days after this notification and at least a day before the beginning of the Delegate Assembly. Proposed amendments to these bylaws may be presented to the Executive Board by any member, and shall be processed by the Executive Board, for approval by the Delegate Assembly.

Article XIV Dissolution

In the event of dissolution, the assets and property of the corporation remaining after payment of expenses and the satisfaction of all liabilities shall be distributed as determined by the Executive Board or as may be determined by a court of competent jurisdiction upon application of the Executive Board, for the non-profit purposes of the corporation and/or to such charitable, literary, and educational organizations as shall qualify under Section 501c3 of the Internal Revenue Code of 1954, as amended. Any of such assets not so distributed shall be disposed of for such purposes as directed by a Justice of the Supreme Court of the State of New York or such other court having jurisdiction over the corporation.

- **Approved at the Delegate Assembly, November 15, 2014**
- **Article VII Delegate Assembly** revised and approved at Delegate Assembly November 16, 2019
- **Article III Membership and XIII Amendment** revised and approved at Delegate Assembly November 6, 2021

American Mathematical Association of Two-Year Colleges

DELEGATE ASSEMBLY MINUTES

December 3, 2022

3:00 – 3:23 pm (EST)

Via Zoom

I. Call to Order

President Laura Watkins called the meeting to order at 3:00 pm (EST).

II. Welcome and Introductions

President Watkins welcomed the delegates and announced that Donn King was appointed as Parliamentarian and Past President Kathryn (Kate) Kozak as Timekeeper. President Watkins introduced the members of the 2022 – 2023 AMATYC Executive Board.

- Laura Watkins – President
- George Hurlburt– President-Elect
- Kathryn Kozak – Past President
- Nancy Rivers – Secretary
- Barbra Steinhurst – Treasurer
- AJ Stachelek – Northeast Vice President
- Dennis Ebersole – Mid-Atlantic Vice President
- Alvina Atkinson – Southeast Vice President
- Brandon Bartley – Midwest Vice President
- Dale Johanson – Central Vice President
- Shannon Ruth – Southwest Vice President
- Sarah Pauley – Northwest Vice President

- Eddie Tchertchian – West Vice President

III. Announcement of Quorum

Secretary Nancy Rivers announced a delegate count of 96 out of 168 delegates and stated that there was a quorum.

IV. Approval of the Rules of Conduct

Without objection the Rules of Conduct (page 22 of the Delegate Assembly Packet) were approved.

V. Approval of the Agenda

The Agenda is included in the Delegate Assembly Packet (page 3 – 4).

Without objection the Agenda (pages 3 – 4 of the Delegate Assembly Packet) was approved.

VI. 2021 Delegate Assembly Minutes

President Watkins reported that the minutes from the 2021 Delegate Assembly (beginning on page 23 of the Delegate Assembly Packet) held virtually were reviewed, revised, and approved by the 2021 Delegate Assembly Minutes Approval Committee, chaired by Sophia Georgiakaki, 2020 – 2021 Vice President, Northeast.

VII. Approval of the 2022 Minutes Review Committee

Information on the Delegate Assembly Minutes Approval Committee is in the Delegate Packet (pages 61 – 63).

Motion: That the membership of the Minutes Review Committee for the 2022 AMATYC Delegate Assembly be approved as announced. (Attachment A)

The 2022 Delegate Assembly Minutes Approval committee consists of:

- Dale Johanson, Central Vice President, Chair

- Alexander Atwood, State Delegate
- Alberto Isassi, Affiliate Delegate
- Christine Mirbaha, Affiliate President
- Nancy Sattler, AMATYC Past President (Marilyn Mays, alternate)
- Nancy Rivers, 2022 – 2023 AMATYC Board Secretary, will serve in an *ex officio* capacity.

Without objection the 2022 Delegate Assembly Minutes Approval Committee was approved as presented.

VIII. Reports

A. President's Report

The report was received in the Delegate Assembly packet (pages 64 – 65).

Additional items to include:

- There were 711 registrants for the in-person component of the conference, including guests. For the virtual component of the conference the total registration was an additional 68.

B. Treasurer's Report

The report was received in the Delegate Assembly packet (pages 66 – 72).

C. AMATYC Foundation

The report was received in the Delegate Assembly packet (pages 73 – 74).

D. Strategic Planning

The 2018 – 2023 Plan was received in the Delegate Assembly packet (pages 75 – 93).

E. Conference Site Selection

There was a site selection this year due to relocating the 2026 AMATYC Annual Conference. As noted in the report, we are currently in negotiations with one of the sites and hope to have a contract in place soon. (page 94 of the Delegate Assembly packet).

IX. Committee Reports

Due to comments from delegates at the 2021 Delegate Assembly and at the request of the AMATYC Executive Board, a committee was formed to survey the delegates about the modality of holding the delegate assembly moving forward. The results of that survey are available in the Delegate Assembly community in *myAMATYC*. This committee is chaired by Southeast Vice President Alvina Atkinson.

X. Old Business

During the 2021 Delegate Assembly, the delegates approved the position statement titled *Initial Placement of Students into the Mathematics Curriculum.* The delegates indicated at that time that the position statement should be referred back to the Placement and Assessment ANet for additional refining and the inclusion of references that support the espoused position. The ANet is currently working on the position statement and is following the standard position statement timeline. Hence there is no report at this time.

XI. New Business

There was no new business.

XII. Items for Discussion

- Jennifer Ackerman, Innovative Teaching and Learning ANet Chair – Consider changing the language and year limitation for eligibility for Project ACCCESS to a more generic “early in their teaching career”.
- Helen Burn, Mathematics Pathways ANet Chair – concern with the length of the conference – as an ANet chair travel is required Tuesday – Sunday and perhaps this time required is keeping people from stepping into leadership positions. Cost of registration is also a concern, especially with a view to equity.

XIII. Announcements

President Watkins made the following announcements:

A. George Alexander, *MathAMATYC Educator*, Journal Assistant Editor, received the 2022 Herb Gross Presidential Award.

B. Nancy Sattler was awarded the 2022 Mathematics Excellence Award. This award has since been renamed the Mathematics Leadership Excellence Award.

C. The members of the 2022 Mathematics Leadership Excellence Award Committee have been selected:

- Chair, Kathryn (Kate) Kozak, Past President
- Anthony Tavares, Northeast
- Keith Nabb, Mid-Atlantic
- Elmira Yakutova-Lorentz, Southeast
- Arthur Schultz, Midwest
- Brandy Englert, Central
- Pat Barrientos, Southwest
- Lori Holdren, Northwest
- Ben Moulton, West

XIV. Adjournment

President Watkins recognized and thanked the Local Events Coordinator for the Toronto Conference, Sean Saunders, and his local team for all the work they performed for the Toronto Conference. Turi Suski, Michael Pemberton, and the rest of the conference committee were also thanked for their year-long commitment and great work in bringing this wonderful conference in Toronto and the virtual component to us this year. Conference presenters and attendees were also thanked for a wonderful conference.

AMATYC Delegates were thanked for their participation in the Delegate Assembly.

The meeting adjourned at 3:23 pm (EST).

Nancy Rivers, Secretary, 2022-2023 Laura Watkins, President, 2022-2023

Attachment A: Minutes Review Committee, 2022 AMATYC Delegate Assembly

The Minutes Review committee, 2022 AMATYC Delegate Assembly, consists of:

- Dale Johanson, Central Vice President, Chair
- Alexander Atwood, State Delegate
- Alberto Isassi, Affiliate Delegate
- Christine Mirbaha, Affiliate President
- Nancy Sattler, AMATYC Past President (Marilyn Mays, alternate)
- Nancy Rivers, 2022 – 2023 AMATYC Board Secretary, will serve in an *ex officio* capacity.

Duties of AMATYC Delegates

Responsibilities of the Delegate Assembly

1. To vote on all dues changes as submitted by the Executive Board.
2. To vote on constitution changes approved by the Executive Board prior to submission for membership ratification.
3. To present written recommendations to the Executive Board to be considered at the following Executive Board meeting.
4. To approve position statements as presented by the Executive Board. Policy-making procedure has been formalized. Each committee chair submits statements (position statements, etc.) to the AMATYC Editing Director. Following its approval, the statement can be submitted to the Executive Board for its review. An open hearing is then held at an AMATYC conference. The statement is then brought before the Delegate Assembly. If the Delegate Assembly approves, the statement will then become AMATYC policy. The Delegate Assembly has the option of overriding a Board decision if 2/3 of the AMATYC delegates present approve bringing it to the Delegate Assembly for vote. Documents submitted must have the word "draft" written on every page until approval is granted.

Duties of state/province delegates

1. Attend Delegate Assembly (no reimbursement).
2. Appoint campus representatives for the colleges assigned to him/her by the Regional Vice President.
3. Actively solicit membership in AMATYC, especially membership of campus representatives.
4. Assist the Regional Vice President in updating the list of potential AMATYC members from his/her state/province.
5. Assist the Regional Vice President in updating the directory of two-year colleges in his/her state/province.
6. Furnish the Regional Vice President with a calendar of activities and concerns of members from the state/province for possible inclusion in the regional page of the *AMATYC News*.
7. Encourage articles for the *MathAMATYC Educator* and other AMATYC publications.

Duties of campus representatives

1. Assist the state/province delegate in promoting the activities of the association at his/her campus.
2. Forward a list of possible candidates for AMATYC membership to the assigned state/province delegate.
3. Assist the assigned state/province delegate and/or the Regional Vice President in updating the directory of two-year colleges in the state/province.
4. Keep the Regional Vice President aware of the changing curriculum patterns at his/her college by sending news related items to the assigned delegate.
5. Furnish the Regional Vice President items of interest from his/her school for the *AMATYC News* according to schedule.
6. Encourage colleagues to submit articles to the *MathAMATYC Educator*.
7. Solicit AMATYC institutional membership at home institution.

Rules of Conduct for AMATYC Delegate Assembly

Debate

In the virtual meeting, if a delegate wishes to speak to a motion, they will submit a request through a Google Form. The link to the form will be provided in the meeting chat. A delegate will enter their name, select their delegate type, and whether they wish to speak for a motion (pro), speak against a motion (con), or ask a process question (such as call the question). Process comments will be taken before pro and con comments. Process questions are used to make an original motion, to call for the question, to clarify, or to rise to a point of order. Pro or con comments will alternate until all comments are made. If there are delegates wishing to make comments (either pro or con), and there are no comments on the opposing side, comments will be heard from all delegates wishing to speak until all have been heard or the question has been called. Amendments and motions to table are considered "con." Each delegate who wishes to speak must be recognized by the President.

Debate begins with the maker of the original motion. Debate alternates between pro and con with the maker of the original motion considered pro. When there are no speakers left, debate ends, and the vote is taken. No speaker may speak to a motion more than two times. Time limits may be imposed on debate either by the President or by a vote of the body. An initial limit of five minutes will be used.

Only members of the Delegate Assembly are permitted to speak.

Other Times (no motion on the floor)

The rules above are in effect any time a motion is on the floor. If no motion is under consideration, delegates may ask to speak by just telling their name and delegate status in the chat.

Open Discussion

Open discussion by delegates at the end of the Delegate Assembly is encouraged. At this time, delegates may present appropriate topics for consideration.

Topics presented must be clearly related to the purposes of AMATYC. The president shall interrupt and rule a speaker out of order if remarks do not lie within these guidelines.

A two-minute limit per delegate is observed. After hearing the topic and rationale, the president may open discussion on the topic, move to the next topic, or assign the topic to an appropriate committee for further discussion.

Delegate Assembly Minutes Approval Procedure

1. At each Delegate Assembly, a Minutes Review Committee of five voting members shall be recommended by the President and approved by motion of the Delegate Assembly. The committee chair shall be a continuing Regional Vice President, or if none, another continuing officer other than the President and the other members shall include a state delegate, an affiliate delegate, and affiliate president and an AMATYC Past---President. The committee will meet briefly at the close of the Delegate Assembly.

2. The AMATYC Secretary shall supply a draft copy of the minutes to the committee within 14 days after the Delegate Assembly. The chair should have an electronic document version for editing.

3. The committee chair shall receive suggestions from the committee, collate and synthesize the suggestions and forward suggestions to the Secretary. The chair should use a review process that ensures that a majority of the committee members are satisfied with the proposed changes.

4. The committee chair will conduct an email ballot to approve the minutes. A majority of the committee must approve the minutes. These approved minutes will be sent to the AMATYC Secretary within 60 days of the Delegate Assembly.

5. A copy of the approved minutes will be included in the delegate packet.

6. At the following Delegate Assembly, the committee chair will report that the minutes were reviewed, corrected, and approved by the Minutes Review Committee.

At each Delegate Assembly, a motion of the Delegate Assembly shall appoint a Minutes Review Committee of five voting members.

Qualifications	Name	Affiliation
Regional Vice President (Chair)		
State Delegate		
Affiliate Delegate		
Affiliate President		
AMATYC Past President		AMATYC Past President

Delegate Assembly Motion

To: AMATYC Delegate Assembly

Year: 2023

Subject: Delegate Assembly Minutes Approval Committee

Submitted by: Laura Watkins, AMATYC President

Date Submitted: 09/21/23

Motion: That the AMATYC Delegate Assembly

approve the membership of the Minutes Review Committee for the 2023 AMATYC Delegate Assembly as attached.

Rationale:

The Delegates Assembly Minutes Approval Procedure as listed in the AMATYC Policy and Procedures Manual, section 4.2.3 states: At each Delegate Assembly a Minutes Review Committee of five voting members shall be recommended by the President and approved by motion of the Delegate Assembly. The committee chair shall be a continuing Regional Vice President, or if none, another continuing officer other than the President, and the other members shall include a state delegate, an affiliate delegate, an affiliate president and an AMATYC Past President. This committee will meet briefly at the close of the Delegate Assembly.

The committee will be formed at the AMATYC Annual Conference and a membership list attached at that time.

Action taken by the Delegate Assembly on: 11/18/23

____**Approved**	____**Postponed Until** _____	____**Withdrawn**
____**Disapproved**	____**Returned for Further Study**	____**Other**

Proposed members of the Minutes Review Committee for the 2023 Delegate Assembly

Qualifications	Name	Affiliation
Regional Vice President (Chair)		
State Delegate		
Affiliate Delegate		
Affiliate President		
AMATYC Past President		AMATYC Past President

President's Report
2023 AMATYC Delegate Assembly
Laura Watkins

I am pleased to report that AMATYC and its membership are advancing numerous initiatives that help AMATYC achieve its mission. Below are some highlights from 2023.

Omaha Conference: I am very excited for the AMATYC Annual Conference in Omaha. I am hopeful that members will join us there as the city has much to offer. The delegate assembly is considered part of our conference proceedings and is being held virtually on Saturday, November 18th. The conference committee as well as the local events committee has worked hard to produce a wonderful conference opportunity, November 9 – 12th. I want to thank Turi Suski, Michael Pemberton, Julie Gunkelman, Nathalie Vega-Rhodes, Crystal Wiggins, and Todd Stein and all of the members of the local events committee for all their efforts in creating a wonderful conference experience.

Fiscal Issues: The organization continues to recover from the impact of the COVID pandemic. The cancelation of the 2020 conference in Spokane along with lower attendance in Phoenix and Toronto has caused AMATYC to dip into its reserves. These reserved funds were saved by previous Boards and has allowed AMATYC to weather the challenges of navigating through a global pandemic. AMATYC has had to use its reserve funds to cover operating expenses. In 2023, $140,000 of AMATYC's reserve funds were used to cover these expenses. More funds may need to be transferred for expenses through the end of the year. Typically, the Strategic Planning and Orientation (SPO) meeting is held in person with ANet chairs being invited to join the Board. Looking forward to SPO for the 2024-2025 Executive Board, this meeting will be held virtually creating substantial savings for the organization.

Monthly Meetings: The Executive Board has continued to pilot having two-hour monthly meetings in months where SPO, SBM, or FBM *are not* scheduled, we also do not meet in December. These meetings have been successful and provided the board with the opportunity to be more responsive to the needs of AMATYC.

Grants: AMATYC continues to support the research efforts of its members. So far this year, AMATYC has provided Level 1 and Level 2 support to grants submitted to the National Science Foundation. In an effort to help AMATYC be more fiscally sound, Megan Breit-Goodwin, April Ström, Anne Dudley and the Office prepared a proposal submitted to the National Science Foundation to increase our indirect cost rate and this proposal has been approved. The indirect costs rate has been raised from a de minimis rate of 10% to a rate of 33.91%. This increase will direct additional funds to the organization for projects where AMATYC is the fiscally responsible entity (Level 2 support) as compensation for managing the project.

AMATYC currently has two Level 2 NSF-funded projects. The *Teaching for PROWESS* (TfP) project is a five-year NSF grant of $1.8 million focusing on improving student success through active learning and on making systemic changes in mathematics education in the community college following the guidelines of the IMPACT document and is in its fourth year. AMATYC members are encouraged to consider hosting a summer workshop offered by this project.. Additionally, AMATYC along with the Two-Year College Chemistry Consortium (2YC3) and American Association of Physics Teachers (AAPT) received a grant titled *Facilitating Accessibility in STEM at Two-Year Colleges Conference* to host a workshop in June focused on creating a community of practice where STEM faculty can share knowledge and techniques that make their classes more accessible for all students.

Collaborations: AMATYC continues to enjoy numerous partnerships with other national organizations and entities. AMATYC funds presidential exchanges with the MAA, NCTM, NCSM, AMTE, NOSS, and TODOS. AMATYC partners with the ASA and JCW on joint committees and with the ASA and the MAA on joint webinars. AMATYC continues to participate as one of 19 member-organizations on the Conference Board of the Mathematical Sciences (CBMS). Participation in CBMS has created closer relationships with other mathematics-focused organizations such that we are able to explore new opportunities for collaboration.

Thank you: I want to thank Anne Dudley, Executive Director, the AMATYC Office, the 2022-2023 AMATYC Executive Board, and Turi Suski, Conference Coordinator, for all their work this year. You made my job much easier.

AMATYC
Balance Sheet
December 31, 2022

ASSETS

Current Assets		
AMATYC Checking	200,454.06	
Accounts Receivable	140,166.96	
Merrill Lynch	1,498,422.66	
AMATYC Foundation Investments	502,328.95	
Total Current Assets		2,341,372.63
Other Assets		
Prepaid Expense	43,711.25	
Prepaid Insurance	7,088.65	
Computer Equipment	16,102.67	
Office Furniture	899.98	
Accumulated Depreciation	(13,531.94)	
Total Other Assets		54,270.61
Total Assets		2,395,643.24

LIABILITIES AND NET ASSETS

Liabilities		
Prepaid Income	24,097.50	
Accounts Payable	303,807.97	
Total Liabilities		327,905.47
Net Assets		
Net Assets	2,040,214.04	
Net Assets: With Donor Restriction		
Other Foundation	264,010.11	
Endowments	289,801.82	
Change In Net Assets	(526,288.20)	
Total Net Assets		2,067,737.77
Total Liabilities & Net Assets		2,395,643.24

AMATYC
INCOME STATEMENT
AS OF 12/31/2022

INCOME

DUES		
Regular Membership		86,531.00
Adjunct Membership		2,629.00
Retired Membership		2,475.00
Institutional Membership		59,694.00
Associate Membership		340.00
Library		1,716.00
Life Membership		9,620.00
WebScription		125.00
Discount Membership		(593.00)
Total Dues	$	162,537.00
INTEREST		
Checking		21.95
Investment Income		192,015.78
Total Interest Income	$	192,037.73
OTHER INCOME		
Educator Advertising		0.00
Other Advertising Income		8,512.00
Student Math League		2,675.00
Student Research League		270.00
Donations/Contributions		10,000.00
Merchandise & Miscellaneous Income		0.00
Grants		258,959.57
NSF Indirect Recovery		13,615.92
Total Other Income	$	294,032.49
CONFERENCE INCOME		
Registration		205,309.00
Virtual Conference Registration		3,700.00
Exhibitors		30,290.00
Exhibitor Product Presentation / Focus Groups		0.00
Commercial Presentations		4,500.00
Hospitality Donations		2,699.07
Symposia/Workshop		0.00
Conference Program Advertising		0.00
In-The-Bag Advertising		1,350.00
Conference Advertising Opportunities		2,000.00
Corporate Partnership		25,600.00
Other Conference Income		32,702.84
Conference Donations		0.00
Total Conference Income	$	308,150.91

FOUNDATION INCOME

General Development	$	14,289.25
Foundation Investment Income	$	44,534.52
Marketing Promotions	$	-
Beyond Crossroads	$	-
Student Math League	$	262.00
Student Research League	$	2,985.00
AMATYC Project ACCCESS	$	4,053.00
Developmental Mathematics	$	32.00
Grants	$	3.00
Standards	$	245.04
Presidential Student Scholar	$	-
Regional Scholarship	$	968.00
Adjunct Conference Grant	$	50.00
Research in Mathematics	$	123.71
Leila & Simon Peskoff Award	$	2,002.50
Margie Hobbs Award	$	1,000.00
Endowments	$	9,628.28
Total Foundation Income	$	80,176.30

TOTAL INCOME	**$**	**1,036,934.43**

COSTS AND EXPENSES

GENERAL OFFICE EXPENSES

Clerical & Casual Labor	18,720.00
Contract Labor	82,656.90
Executive Director Salary	29,065.56
Executive Director Travel	3,030.81
Staff Development	49.00
Reassigned Time	10,000.00
Legal Expenses	0.00
Accounting Expenses	8,175.00
Servicemark Fee	0.00
Consulting Fees	0.00
Postage & Delivery	778.14
Telephone	0.00
Transportation	0.00
Office Supplies	2,022.21
Duplication Expense	0.00
Membership Services	468.85
Payroll Preperation Charges	1,725.25
Bank Service Charges	113.25
Credit Card Services	5,547.23
Miscellaneous Service Charges	80.02
Computer Hardware & Supplies	3,524.50
Bad Debt	1,500.00
Depreciation Expense	1,652.60
Licensing Fees	280.00

Other General Office Expense		773.90
OnLine Database		12,325.97
Software Annual Fees		4,782.36
Insurance		12,038.78
Southwest Tennessee CC Expenses		10,000.00
Total General Office Expense	$	209,310.33

SPRING OFFICERS' MEETING

Transportation		6,971.49
Lodging		5,226.40
Food		1,703.95
Other SOM		0.00
Total Spring Officers Mtg	$	13,901.84

STRATEGIC PLANNING/ORIENTATION

Transportation		712.00
Lodging		0.00
Food		0.00
Other SPOM		0.00
Total Strategic Planning/Orientation	$	712.00

ANNUAL CONFERENCE

CONFERENCE PLANNING

Advance Planning Visit		1,779.41
Site Selection Visits		831.52
Telephone		0.00
Program Preparation Expense		2,524.93
Spring Officer Meeting		0.00
Supplies		0.00
Conference Marketing		582.00
Conference Logo Design		350.00
Exhibit Marketing		1,107.08
Conference Enhancements		0.00
Conference Coordinator		1,582.23
Total General & Future Conf. Planning	$	8,757.17

CONFERENCE EXPENSES

Speaker Fees/Expense		4,859.74
Conference Space Rental		0.00
Exhibit Space Carpet & Drayage		9,032.00
Shuttle Bus & Workshop/Mini Transportation		0.00
Audio Visual/Computer Rental		65,663.24
Other Rentals		0.00
Computer/Email Access		0.00
Internet - Registration		0.00
Symposia/Workshops		0.00
Conference Insurance		2,866.02
Registration Equipment & Materials		9,285.78
Stationery, Supplies, Duplication		394.09

Postage, Delivery & Shipping		3,050.35
Credit Card Services		12,943.52
Photography		970.41
Conference Release Time		12,000.00
Staff Salaries		153,505.69
Clerical and Casual Labor		0.00
Registration Workers		1,546.34
Security Guards		1,822.03
Prof. Conf. Planning Organization		12,043.08
Anets		0.00
Transportation		23,824.32
Lodging		29,222.49
Food		1,452.00
Telephone		0.00
Friday Event		26,969.34
Saturday Breakfast		22,132.30
Local Emphasis		1,982.84
Affiliate Presidents Luncheon		2,435.67
Leadership Dinner		2,577.44
ACCCESS Food		0.00
Appreciation Reception		742.22
Hospitality		3,246.05
Awards		65.00
Other Annual Conference		9,098.16
Total Conference Event Expenses	$	413,730.12
CONFERENCE PUBLICATIONS		
Advertising/Exhibitor Folder		0.00
Call for Papers & December Flyer		675.00
Miniprograms		7,630.56
Conference Grid		1,150.00
April Flyer		1,920.07
Conference Publications Expense	$	11,375.63
TTL Annual Conf Event	**$**	**433,862.92**
PUBLICATIONS		
The MathAMATYC Educator		31,403.89
The Newsletter		12,153.98
Other Publications		0.00
Total Publications	$	43,557.87
COMMITTEES & INSTITUTES		
Division/Department Issues		0.00
Developmental Mathematics		0.00
Teacher Preparations		0.00
Mathematics Intensive/College Mathematics		0.00

Math and Its Applic for Career		0.00
Innovative Pedagogy Strategies		0.00
Emerging Issues		0.00
RMETYC Committee		0.00
Placement/Assessment		0.00
Web Site Coordinator		0.00
Webinars		200.00
Membership Committee		0.00
Grants Committee		0.00
Crossroads Coordinators		0.00
Beyond Crossroads		0.00
Student Math League		850.00
Student Research League		3,166.96
Summer Institutes & Workshops		0.00
Traveling Workshops		(418.80)
Nominating Committee		0.00
ME & TE Awards		0.00
Regional Meetings		0.00
Grant Seed Fund		0.00
Total Committee & Institutes	$	3,798.16
LIAISON		
CBMS		3,500.30
CSSP		0.00
Triangle Coalition		0.00
MAA		1,522.91
NOSS		373.20
TODOS		0.00
NCTM		1,811.64
Mu Alpha Theta		0.00
Affiliate Give-aways		2,087.72
Affiliate Services		316.81
Affiliate Liaison		3,916.30
National & Community Relations		1,791.79
Other Liaison		1,714.26
Total Liaison Expense	$	17,034.93
INDIRECT COST - SPECIAL PROJECTS		
Indirect Cost	$	(13,615.92)
Total Indirect cost		(13,615.92)
SPECIAL PROJECTS		
Project GAINS		0.00
Project ACCCESS		7,078.00
NSF Project Slope		(405.00)
NSF ACCCESS Research		27,115.51
NSF TfP Grant		235,459.98
Total Special Projects Expenses	$	269,248.49

AMATYC FOUNDATION

General Foundation	$	3,641.39
Beyond Crossroads	$	-
Project ACCCESS	$	-
Student Math League	$	970.00
Student Research League	$	2,683.00
Developmental Mathematics	$	1,999.18
Grants	$	-
Presidential Student Scholar	$	2,000.00
Leila & Simmon Peskoff Award	$	1,960.00
Margie Hobbs Award	$	-
Total Foundation Expenses	$	13,253.57
Grand Total Expenses	**$**	**991,064.19**
Change in Net Assets (before investments)	**$**	**45,870.24**

Investment Income

AMATYC Investment Unrealized Gain/Loss	$	(453,428.20)
Foundation Investment Unrealized Gain/Loss	$	(118,730.24)
Total Income less Expenses on Investments	$	(572,158.44)
Total Income with Investments	**$**	**464,775.99**
Total Expenses with Investments	**$**	**991,064.19**
Total Change in Net Assets	**$**	**(526,288.20)**

AMATYC Foundation
2023 Delegate Assembly Report
Submitted by Kathryn Kozak
October 4, 2023

AMATYC Foundation Board Members: Cheryl Cleaves, Ernie Danforth, Anne Dudley), Kate Kozak (Chair), Fred Peskoff, Bill Steenken, Barbra Steinhurst, Sarah Palley, Laura Watkins

The Foundation Board meets monthly via ZOOM. Here are some actions we have taken or items we have been working on in 2022:

- **Wanda Garner Presidential Student Scholarship (WGPSS):** The Foundation decided to award two $1000 scholarships this year. Nominations are due on October 15. The awardees will be randomly chosen at the October Foundation meeting. The awardees will be announced after that date.

- **Leila & Simon Peskoff Award**: The Leila and Simon Peskoff award was awarded to Marty Kellum.

- **Hobbs Award**: Margie Hobbs award was awarded to Ajai Simmons.

- **Regional Scholarships:** The Foundation agreed to fund an additional 8 Regional Scholarships for Toronto above the 8 supported by the Executive Board.

- **AMATYC Project ACCCESS**: The Foundation continues to budget annual financial support (about $14,000) to AMATYC Project ACCCESS fellows for conference housing and food.

- **Donations to the Foundation**: The 2022 fundraising drive raised $35,099.23.
  History of Donations

Year	2022		2021		2020		2019		2018		2017	
	$	#	$	#	$	#	$	#	$	#	$	#
Total	35,562.98	311	23,145.14	217	$40,536	148	$28,475	314	$30,549	630	$33,375	537

2016		2015		2014	
$	#	$	#	$	#
$30,709	487	$28,843	575	$34,966	519

- **2023 Fundraising Campaign**: The Foundation has set the fundraising goal for this year to be $35,000 and has been a yearlong fund-raising campaign in 2023. The fundraising started with "Show your Love Campaign" in March. The "Show your Love Campaign" raised $1335.00 from 6 donors. This campaign will not be repeated. The "dot campaign" will return to the conference, which starts with an email fundraising campaign in October and ends on the Friday of the conference. There is also a campaign of $50 for the 50th, where anyone who gave $50 or more to AMATYC will be in a drawing for 1 of 10 50th anniversary swag packages. Every dollar makes a difference!

- **Newsletter Articles**: The Foundation submits one article for inclusion in each issue of the *AMATYC News.* The articles describe the work of the Foundation, highlighted the programs and

awards funded by the Foundation, encouraged monthly donations, and described the travel awards given in 2023 for professional development. Donors from the previous year are listed annually in the Fall issue.

- **Transfer of funds among the investment accounts**. Donations that will not be needed within 3 years are transferred to AMATYC's investment accounts. At the end of 2022, over $21,384.37 was transferred into the Foundation investment fund.

- **Member support.** The Foundation gave 12 $400 travel grants to AMATYC members that they could use to attend a professional development activity that they were interested in. This was a popular activity of the Foundation and supported the goals of the Foundations strategic plan. Overall, around 76 members applied for the grants.

Thanks to all donors for supporting members and the mission of AMATYC by contributing to the AMATYC Foundation!

2018 - 2023 AMATYC Strategic Plan Strategies

Priority I: Advocate for mathematics educators and mathematics students.

A. Expand the visibility of AMATYC.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Develop a plan for and increase presence of AMATYC on social media	Ongoing	Social media Committee
Promote AMATYC webinars	Ongoing	Professional Development coordinator, webinar coordinator
Reach out to local four-year institutions and universities near the location of the Annual Conference, including graduate schools	Ongoing	VP whose region the conference is in
Make swag available at conferences of partner organizations	Ongoing	ED, membership committee
Promote our position statements by making them more visible and available to all stakeholders	Medium	Board
Create a clearing house of all position statements of sister organizations and AMATYC	Medium	ED, President
budget $3,000 to contract with YourMembership.com to redesign the AMATYC website, making it mobile-friendly	Completed	Board, Webmaster
Expand presence in graduate programs in Mathematics.(CIRTL) and mathematics education and encourage participation in local affiliate meetings	Medium	VP
Support more grants	Ongoing	Board, grant coordinator
Recruit more four-year college instructors into AMATYC	Medium	(Membership Committee)
Develop a press release package about AMATYC to send out to community colleges. (“What does AMATYC mean to me”, position statements information, website, membership types, etc)	Short	Membership Committee

B. Further a common vision by strengthening collaborations with other organizations.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Continue the work with TPSE Math	Ongoing	President
Continue our involvement with CBMS, MAA, AMS, NCTM, NOSS, AMTE, NCSM, JMM, ASA, TODOS, etc.	Ongoing	President and ED
Encourage AMATYC members to participate in other organization's conferences and invite their members to our conference	Ongoing	ED
Publicize the connects with other organizations through the Collaboration Corner in *AMATYC News*	Ongoing	Board

C. Recruit and retain individuals from under-represented groups into AMATYC membership and leadership.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Continue our partnership with TODOS	Ongoing	President and ED
Approve our position statement on Equity	Medium	Equity Committee
Continue the AMATYC Project ACCCESS Program	Ongoing	board
Create an Equity Committee	Complete	Board
Have a separate program key for equity	Short	Conference Committee and board
Invite a national speaker on equity to give a non-reviewed presentation at an AMATYC Annual Conference	Ongoing	President

D. Attract and retain students into mathematics intensive fields, particularly students from under-represented groups.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Encourage students involved in SML and SRL to become members of AMATYC	Short	Student Leagues Leaders

Continue door prize donation to Mu Alpha Theta	Ongoing	Liaison to Mu Alpha Theta
Continue work with JCW	Ongoing	Liaison to JCW
Collaborate with National Hispanic Caucus	Medium	Equity Committee
Explore grants to promote mathematics majors to elementary and middle school students	Long	Board and grant coordinator
Establish a relationship with Math Counts (middle school national mathematics competition), https://www.mathcounts.org/	Long	ED
Use IMPACT Live as a repository of ideas of how you encourage underrepresented minorities into mathematics	Short	IMPACT group
Promote equity issues through presentations, webinars, and articles	Ongoing	Equity Committee
Provide special equity training for AMATYC board (This is also on V initiative C.)	Short	Board
Provide Professional Development that focuses on inclusive teaching and applications of mathematics of interest to under-represented groups.	Long	PD Coordinator, Travelling Workshop Coordinator, Program Committee
Expand involvement in NCTM, including information sharing on college expectations/preparations of students	Long	ED, President

E. Advance seamless course and program articulation.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Facilitate conversations between two-year and four-year (and universities) institutions, focusing on articulation	Long	President, VP, ED
Support Pathways work	Ongoing	Pathways Joint Committee
Encourage community colleges and universities to facilitate reverse transfer	Long	President, VP, ED
Encourage block transferring of lower division common courses	Long	President, VP, ED

F. Develop and maintain standards for mathematics education in the first two years of college.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Disseminate and Promote Crossroads, Beyond Crossroads, IMPACT	Ongoing	Board
Position statements reviewed, updated and new ones written	Ongoing	Board
Promote current position statements.	Ongoing	Board
Create a new way to hold position statement forums; electronic review and input, perhaps	Short	Board and Conference Committee
Investigate developing a position statement on multiple measures of success/completion	Short	Board
Promote IMPACT and IMPACT Live!	Ongoing	Board
Review the standards of *Crossroads* and *Beyond Crossroads* to see if they are still applicable	Ongoing	Standards Committee

G. Educate the public on the AMATYC IMPACT standards and other AMATYC or national initiatives.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Promote AMATYC IMPACT and other standards documents to other organizations and colleges- NCTM, MAA, ASA, TODOS, National Hispanic Caucus, JCW, etc.	Ongoing	President, ED
Promote AMATYC on social media platforms, such as Facebook, Instagram, and Twitter	Ongoing	Social Media Committee
Write press releases and post them on social media	Ongoing	Social Media Committee
Invite media to AMATYC conferences	Short	Conference committee and Board

Priority II: Provide and promote professional development opportunities to faculty whose primary focus is mathematics in the first two years of college.

A. Create year-round AMATYC opportunities for professional development utilizing various modalities.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Continue Project ACCCESS	Ongoing	AMATYC Board, AMATYC Foundation
Encourage committees/ANets to present co-sponsored webinars	Ongoing	Committee/ANet Chairs, Professional Development Committee
Promote affiliate conferences, webinars, and traveling workshops as additional forms of professional development	Ongoing	VPs, President-Elect, Affiliate Presidents
Encourage and develop grant opportunities that provide professional development	Long	Grants Coordinator, AMATYC Executive Board, Committee Chairs
Develop, offer, and promote traveling workshops	Ongoing	Traveling Workshop Coordinator, Professional Development Committee, Committee Chairs
Provide professional development on contemporary issues in mathematics education	Ongoing	IMPACT Live!

B. Offer professional development focused on mentoring new faculty teaching mathematics in the first two years of college.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Continue to support Project ACCCESS	Ongoing	AMATYC Executive Board, AMATYC Foundation
Support the "*Mobile NExT*" grant	S (Ongoing if get grant)	AMATYC Executive Board
Encourage affiliates to create and promotion mentoring projects similar to ACCCESS for	Long	Regional VPs, Project ACCCESS Coordinator

their local affiliates		
Offer webinars targeted toward new faculty teaching mathematics in the first two years of colleges		Committee Chairs
Develop faculty learning communities targeted toward new faculty teaching mathematics in the first two years of colleges		Committee Chairs
Develop a structure at the AMATYC Annual Conference for first-time attendees to network with returning attendees	Long	Executive Board, Conference Committee
Supporting new ACCCESS members to become part of the leadership networks and develop their leadership skills	Ongoing	

C. Enhance access to high quality professional development for all mathematics faculty.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Survey AMATYC members to get feedback on what they would like to see for professional development opportunities	Short and long	Professional Development Committee
Reach out and leverage groups who can host pre-conference workshops– through grant money, etc. – similar to what dev math and stats have done in the past.	Ongoing	Committee Chairs, Grants Coordinator
Disseminate PD position statements.		
Encourage Affiliates and Institutional Members to use AMATYC's YouTube Channel as a form of professional development	Medium	Conference Committee, Affiliate Presidents, Social Media Committee
Develop new initiatives to increase awareness of existing PD opportunities for adjuncts	Long	Adjunct Faculty Issues ANet
Increase our capacity to offer more webinars by training more hosts.	Long	Webinar Coordinator
Curate a professional development library	Long	IMPACT Live!

D. Collaborate with other organizations to provide professional development opportunities.

Strategies	Timeline - Short, Medium,	**Responsible Party**

	Long, Ongoing	
Collaborate with other organizations on designing professional development (MAA - Project NExT)	Ongoing – if get grant	Executive Director, President, Grants Coordinator
Encourage other organizations to jointly sponsor sessions/webinars together	Ongoing	Executive Director, President
Training IMPACT Ambassadors to be involved with other national organizations on sharing resources, research, and networks	long	IMPACT Live!
Cooperate with CBMS (17 organizations) to see if we can come up with joint initiatives		Executive Director, President
Investigate what other organizations are doing with respect to professional development	short	Executive Director, President
Research funding opportunities to expand programs and offerings	long	Executive Director, President, Grants Coordinator
Continue support of existing partnerships	Ongoing	Executive Director, President

Priority III: Promote research on the teaching and learning of mathematics and statistics in the first two years of college.

A. Encourage qualitative and quantitative research focused on student learning for a diverse range of learners**.**

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Hold a research pre-session on Wed ahead of conferences (currently RMETYC supports this on Thurs nights - Symposium format).	Ongoing	RMETYC
Continue encouraging research-based talks during conference	Ongoing	RMETYC, AMATYC News, email blasts

Investigate different possibilities of using the *MathAMATYC Educator* to promote research in mathematics education, such as a special issue, problem section that is focused on a research problem, and inclusion of student research.	Ongoing	Editorial board, RMETYC, Student Research League
Investigate the possibility of an AMATYC research "center" or "arm" that produces research for community colleges (e.g., Center for Research of AMATYC = CRAMATYC)	Short	RMETYC, AMATYC Board

B. Train and support faculty who are interested in conducting research and classroom research.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Hold targeted webinars on research methods in mathematics education research.	Ongoing	RMETYC, Webinar Coordinator, Statistics Committee, PD Coordinator
Hold periodic virtual meetings for dissemination of research practices and findings, as well as mentoring early researchers.	Ongoing	RMETYC
Develop research associates (as described in the PPM) through projects such as Project SLOPE.	Long	Project Director (if available), Project ACCCESS Coordinator, AMATYC Executive Director

Develop a position statement to support research in mathematics education in two-year colleges and by two-year college faculty. This position statement could be used as a tool to gain support from college administration for faculty engagement in research.	Medium	RMETYC
Provide avenues for continuous improvement in the area of writing articles with quality research for the *MathAMATYC Educator* based upon a list of attributes for successful publications provided by the editorial team.	Ongoing	RMETYC, MathAMATYC Educator Editors
Investigate the usefulness of attending organizations such as AACC and/or ASHE.	Short	AMATYC Executive Director, RMETYC Chair

C. Pursue grants and other means of financial support for classroom research on teaching and learning.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Seek out and encourage potential grant projects that promote research in mathematics education (e.g., Project SLOPE, AI@CC, Project ACCCESS).	Ongoing	AMATYC Grants Coordinator, RMETYC, AMATYC Executive Director, AMATYC Foundation Board
Disseminates grant opportunities, funded grant projects, and research references for faculty via IMPACT Live!	Ongoing	Grants Coordinator

Collaborate with other organizations to partner on grant project.	Ongoing	AMATYC President, Past-president, Executive Director, Grants Coordinator
Leverage research associates from Project SLOPE to help bring in researchers and disseminate research results.	Ongoing	Lead of Project SLOPE, RMETYC Chair

D. Continue to improve instructional resources based on classroom research.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Leverage Project ACCCESS fellows for disseminating project outcomes.	Ongoing	Project ACCCESS Coordinator
Promote and encourage implementation of IMPACT/IMPACT Live.	Ongoing	Standards Committee, AMATYC Board
Investigate future special issues for the MathAMATYC Educator that connect to current trends.	Long	Editorial board
Consider a position statement addressing research-based instructional resources.	Medium	RMETYC Chair, Committees and ANets

E. Advocate for the continued improvement of placement processes based on program assessment.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**

Hold webinars on placement processes and program assessment	Ongoing	Placement and Assessment Committee
Provide Placement and Assessment Themed Session at annual conference.	Ongoing	Placement and Assessment Committee
Consider revising position statements on placement and on program assessment.	Ongoing	Placement and Assessment Committee

F. Assist faculty, departments, and colleges to institute innovative practices informed by research.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Conduct webinars on innovative practices informed by research.	Ongoing	AMATYC Committees
Highlight the IMPACT research chapter through email blasts, webinars, conference sessions, etc.	Ongoing	Standards Committee, RMETYC
Continue to support Project ACCCESS and their mission to help colleges improve instructional practices.	Ongoing	Project ACCCESS Coordinator, AMATYC Board
Promote and encourage implementation of IMPACT/IMPACT Live.	Long	Standards Committee, AMATYC Board

G. Disseminate resources and model practices for research-based teaching and learning.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Promote AMATYC's Student Research League and disseminate student research projects.	Ongoing	SRL Team
Create website for researchers to disseminate research work	Long	RMETYC
Use AMATYC publications to showcase ways to incorporate research in the classroom.	Ongoing	Editorial Teams, RMETYC
Use IMPACT Live! Hot Topics to disseminate research ideas.	Ongoing	Standards Committee, Digital Coordinator Chair
Develop a repository of research-based resources in IMPACT Live!	Ongoing	RMETYC
Investigate ways to disseminate and promote IMPACT ideas through alternative approaches (e.g., MOOC and online professional development venues).	Ongoing	Standards Committee, Professional Development Coordinator
Encourage collaboration among AMATYC committees and ANets.	Ongoing	Committee Chairs, ANet Chairs

Priority IV: Improve mathematics and statistics curricula in the first two years of college.

A. Seek to provide a strong and relevant mathematics curricular experience for all students.

Strategies	Timeline - Short,	**Responsible Party**

	Medium, Long, Ongoing	
Adopt a position statement on Liberal Arts Mathematics Courses	Short	Mathematics for Liberal Arts ANet
Prioritize the work of the Pathways Subcommittee	Short	Pathways Subcommittee
Offer travelling workshops that demonstrate the position statement on Intermediate Algebra	Short, Medium	TW Coordinator
Promote data science and analytics curricula in the first two years of college	Medium, Long	Data Science Subcommittee
Use IMPACT Live! to highlight curricular innovations.	Short, Medium	IMPACT leaders
Advocate against terminal math courses. Instead advocate for mathematics courses that are designed to promote a next mathematics class.	Ongoing	Pathways JS
Promote math curricula that supports new programs for STEM and non-STEM majors.	Ongoing	Academic Committees
Develop a Position Statement on Nursing Math	Long	Ad hoc committee or MAC Committee subgroup

B. Design and refine pathways for both STEM (Science, Technology, Engineering, and Mathematics) and non-STEM students.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Promote the development and value of the STEM and non-STEM pathways.	Ongoing	Pathways JS
Develop transition paths for students who change from one pathway to another.	Medium, Long	Pathways JS
Plan a themed issue *for MathAMATYC Educator* on mathematical pathways.	Short	Journal Team
Survey existing courses and articulation agreements concerning Associate of Applied Science in Data Science/Analytics	Short	Data Science Subcommittee
Invite speakers to conferences that address Pathways and new curricular.	Short, Medium	Pathways JS
Share various approaches, successes or failures of approaches being taken by math departments, e.g. the co-requisite models taking hold around the country	Ongoing	Pathways JS

Facilitate discussions of pathways and successful implementation of pathways via IMPACT Live!	Ongoing	Pathways JS, IMPACT Team
Promote vertical articulation models.	Ongoing	Affiliates
Create a library of effective Pathways models. Advocate for scaling up the most promising models.	Ongoing	Pathways JS, IMPACT Team
Update the position statement on initial placement of students	Short	Placement and Assessment Committee

C. Promote the appropriate instruction and assessment of curricula.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Promote evidence-based practices in the teaching mathematics	Ongoing	IMPACT Live! Team
Promote meaningful alternative course assessment.	Ongoing	Placement and Assessment Committee
Continue to utilize AMATYC's Webinars and Travelling Workshops to provide relevant professional development opportunities.	Ongoing	TW Coordinator
Update the position statement on assessment of student learning and mathematical programs	Short, Medium	Placement and Assessment Committee
Encourage mathematics departments to update curricula.	Ongoing	Division/Department Issues ANet
Survey the needs of our non-math disciplinary leaders to seek new and innovative curriculum.	Long	Ad hoc committee
Use IMPACT Live! to share assessment best practices.	Ongoing	IMPACT Live! Team
Promote the ongoing assessment of the Pathways to determine if they achieve what we want them to achieve.	Long	PJS

D. Encourage the appropriate use of technologies to enhance student learning.

Strategies	Timeline - Short, Medium,	**Responsible Party**

	Long, Ongoing	
Increase the participation of innovative-technology-related IGNITE sessions.	Ongoing	ITLC Committee
Categorize innovative uses of technology on *IMPACT Live!*	Short, Medium	IMPACT Team!
Promote sessions at the conference that effectively emphasize using modern technology to enhance student learning	Short, Medium	Conference Committee
Include *MathAMATYC Educator* articles that encourage the appropriate use of technologies to enhance student learning.	Short, Medium	Journal Team
Promote more conference sessions on online homework management systems and open educational resources (OER).	Short, Medium	Conference Committee
Encourage the use of statistical software and real data to enhance student learning.	Ongoing	Statistics Committee
Review the position statement on the Use of Technology, particularly as it relates to Calculus, Differential Equations, etc.	Short, Medium	ITLC, Math Intensive Committees
Provide Professional Development (conference/traveling workshops/webinars) on using technology in active learning.	Ongoing	TW Coordinator, Webinar Coordinator, Conference Committee
Facilitate discussions on utilizing current technologies with an awareness of its impact on our students (development of the students' mathematical understanding), including cost.	Ongoing	ITLC

E. Facilitate the communication of successful curricular innovations that improve student learning.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Collaborate with other institutions such as CCRC, Dana Center, CCESSE, and Carnegie/WestEd.	Ongoing	Board members
Disseminate the work of other organizations to AMATYC members.	Ongoing	News Editor, Journal Team, Social Media Committee

Encourage the implementation of using evidence-based practices in the classroom through articles in the *MathAMATYC Educator*	Ongoing	Journal Team
Give conference vendors a venue to share and promote high quality innovative curricular products.	Ongoing	Conference Committee
Seek involvement with gamification into the instruction.	Long	ITLC or other committees
Use AMATYC programs to advance member professional development.	Ongoing	TW Coordinator, Webinar Coordinator
Disseminate the work of the Innovative Teaching and Learning Committee and its members.	Ongoing	ITLC
Disseminate research findings on mathematics in the first two years of college on IMPACT Live!	Ongoing	IMPACT Live! Team
Promote AMATYC position statements to members, member colleges, partner organizations, and affiliates	Ongoing	Board
Use IMPACT Live! to share successful innovations.	Ongoing	IMPACT Live! Team

Priority V: Build connections within communities of educators across regions, departments, and institutions.

A. Enrich relationships with and provide support for AMATYC affiliate organizations.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Encourage the affiliate presidents to post in social media highlighting past/future happenings in their affiliate. This can be done in the quarterly PE newsletter to affiliate presidents.	Ongoing	President-Elect
Improve communication with affiliates	Ongoing	VPs, President-Elect, Affiliate Presidents
Extend an invitation to affiliates to use traveling workshops to strengthen and expand the relationship between AMATYC and affiliate organizations	Ongoing	Traveling Workshop Coordinator

Attendance at affiliate conferences by AMATYC VP's or other board member to promote *AMATYC IMPACT*	Short Ongoing	Vice-Presidents
Continue communication between the AMATYC Board and the affiliate presidents	Ongoing	President–Elect
Encourage small, perhaps struggling, affiliates to work with bordering state affiliate, local NCTM affiliate or local MAA section.	Ongoing	Vice-Presidents
Yearly attendance if possible, for each VP to attend the affiliate conferences.	Long	Vice-Presidents
Offer travelling workshops	Ongoing	Professional Development Committee
Offer affiliate scholarships to the AMATYC Annual Conference	Ongoing	Executive Board
Advertise affiliate conferences and leadership	Ongoing	Website
Encourage inter-affiliate activities	Ongoing	Vice Presidents
Create a directory on the *IMPACT Live* website so states can contribute information about state wide Math initiatives.	Long	*IMPACT Live* Digital Coordinator

B. Support and increase participation in AMATYC's Academic Committees and AMATYC networks (ANets).

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Videotaping of committee chairs to be used in an upcoming webinar.	Completed Revisit every two years	Professional Development Coordinator
Encourage all committees and ANETs to hold at least one meeting after the conference	Ongoing	Committee Chairs, ANET Leaders, liaisons
Encourage AMATYC committees and ANets to post information on AMATYC affiliated social media	Ongoing	Committee Chairs, ANET Leaders, liaisons
Consider creating new Committees and ANets as new trends emerge	Ongoing	Executive Board
Offer travelling workshops	Ongoing	Professional Development Committee
Provide Committee and ANet members conference sessions of interest and meeting agendas.	Ongoing	Committee Chairs and ANet Leaders

Offer training on leadership expectations and responsibilities to Committee Chairs and ANet Leaders	Ongoing	Executive Board
Provide AMATYC 101 training at the affiliate conferences about the mission and purpose of AMATYC	Ongoing	Vice Presidents
Create and post videos of ANet Leaders or Committee Chairs advertising their committees and happenings and post them on the Facebook pages	Ongoing	Committee Chairs and ANet Leaders

C. Extend opportunities for local, national, and international networking to those interested in mathematics in the first two years of college.

Strategies	Timeline - Short, Medium, Long, Ongoing	**Responsible Party**
Host 2018 National Mathematics Summit	Completed	DMC and educational partners
Creation of Traveling Workshops for promotion of *AMATYC IMPACT*	Completed	PDC and Standards Committee Chair
Continue participation in CBMS and encourage collaborations with other CBMS organizations	Ongoing	Executive Director and President
Sharing of position statements among mathematically minded organizations	Ongoing	Executive Director and President
Encourage international involvement for AMATYC members	Ongoing	International Math Network leader
Encourage AMATYC members to make presentations about IMPACT at other professional organization conferences	Ongoing	Standards Committee
Provide funding to send people to international conferences	Ongoing	Executive Board
Share best practices related to what can we learn from what other countries do in the classroom	Ongoing	International Math ANet
Organize preconference's with organizations that have similar interests	Ongoing	Executive Board, Committees and ANets

D. Promote a diverse community of mathematics educators which recognizes and welcomes the unique contributions of all participants.

Strategies	Timeline - Short,	**Responsible Party**

	Medium, Long, Ongoing	
Continue collaboration with sister organizations to promote AMATYC IMPACT.	Ongoing	Executive Director and President
Seek professional development opportunities to encourage diversity and equity in within STEM fields	Ongoing	Professional Development Coordinator
Investigate grants that address the issues of diversity, equity, and social justice	Ongoing	Grants Coordinator
Development of new faculty through Project ACCCESS	Ongoing	AMATYC organization
Promote accomplishments of individual AMATYC members through the AMATYC News and MathAMATYC Educator.	Ongoing	Newsletter Editor and Educator Editor
Promoting and emphasizing that we are the mathematics “in the first two years of college”.	Ongoing	Executive Board

AMATYC Strategic Plan 2024 - 2029

For all involved in mathematics education in the first two years of college, AMATYC will:

1. Provide Access to High Quality Professional Development
    a. Offer professional development via various modalities.
    b. Provide opportunities for reflection and gaining insights into effective practices for teaching mathematical concepts and pedagogical practices.
    c. Address the needs of and offer professional development appropriate for faculty at various stages of their career.

2. Build an Inclusive Environment within AMATYC and within the First Two Years of Mathematics Education
    a. Foster a climate where all feel welcome, valued, and included.
    b. Promote a diverse community of mathematics educators which recognizes and welcomes the unique contributions of all participants.
    c. Encourage and disseminate research focused on student learning for diverse learners.
    d. Extend opportunities for local and regional networking to those interested in mathematics in the first two years of college including enriching relationships with and providing support for AMATYC affiliate organizations.

3. Collaborate and Advocate Externally
    a. Expand the visibility of AMATYC, locally, nationally and internationally by strengthening collaborations with other organizations.
    b. Expand student access to mathematics and statistics, particularly students from under-represented groups.
    c. Communicate and disseminate the AMATYC Standards, AMATYC publications, and national initiatives.
    d. Support classroom research on teaching and learning.

4. Provide Resources for the Mathematics Community
    a. Propagate and facilitate the sharing of research-based teaching, learning practices, and assessment methods.
    b. Develop, update, and maintain position statements.
    c. Promote and develop current and relevant standards.
    d. Share tools for faculty that create a strong and relevant mathematics experience for all students, including successful curricular innovations.

AMATYC Mission Statement

The American Mathematical Association of Two-Year Colleges (AMATYC) mission is to provide high quality professional development, to build inclusive communities of scholars, and to collaborate with and advocate for all involved in mathematics education in the first two years of college.

AMATYC's Vision

To be the leading voice and resource for excellence and inclusion in the first two years of mathematics in colleges and universities.

AMATYC's Core Values

Core Values represent core priorities, traits, or qualities in the organization's culture that are considered worthwhile.

Core Value:	**Operational Definition:**
Excellence	Supporting the design and implementation of a quality educational experience in mathematics for students that uses practices proven effective by research.
Inclusivity	Providing a welcoming environment and ensuring full access to opportunities and resources for all students and faculty.
Community	Providing opportunities for networking, growth, and encouraging mutual respect for other mathematics professionals for the betterment of the mathematics teaching profession.
Responsiveness	Creating, developing, implementing, and redefining instructional strategies, curricula in mathematics, current technology, and classroom practices. Determine successful practices based on research of how students best learn mathematics and how faculty best teach mathematics.
Integrity	Safeguarding the qualities of honesty, sincerity, trustworthiness, global consciousness, and a code of sound moral professional principles.

Professional Development	Building expertise and exhibiting leadership in the teaching and learning of mathematics, enhancing personal growth, and improving teaching methods and effectiveness as an ongoing responsibility.

Conference Site Selection

AMATYC is excited to announce that our **2026 Annual Conference will be held in Philadelphia, PA, November 19-22, 2026.**

Dates and locations for other future conferences are:
Atlanta, GA, November 14 – 17, 2024
Reno, NV, November 13 – 16, 2025
Philadelphia, PA, November 19 – 22, 2026
Spokane, WA, November 11 – 14, 2027
Phoenix, AZ, November 9 – 12, 2028

Delegate Assembly Motion

To: AMATYC Delegate Assembly

Year: 2023

Subject: Content Standards Update

Submitted by: Julie Phelps

Date Submitted: 09/22/23

Motion: That the AMATYC Delegate Assembly
approves the updates to the Standards for Content.

Rationale:

The AMATYC Standards Team is responsible for establishing and implementing a process of regular review of the standards. The AMATYC standards documents were published in 1995 and many changes have taken place in the mathematics and statistics fields since then. This is an effort to update the Standards for Content to align with the current trends of today.

Action taken by the Delegate Assembly on: 11/18/23

____Approved	____Postponed Until _____	____Withdrawn
____Disapproved	____Returned for Further Study	____Other

STANDARDS FOR CONTENT

~~Mathematics education has traditionally focused on content knowledge. Within this tradition, "knowing mathematics" meant knowing certain pieces of subject matter. This document~~

AMATYC takes the position that ~~knowing mathematics means being able~~ to ~~do~~truly understand mathematics and statistics one must know it conceptually, contextually, and procedurally and know that problem solving is the heart of doing mathematics. The successful problem solver can view the world from a mathematical perspective (Schoenfeld, 1992).

Students ~~gain~~develop the ~~power~~ability to solve meaningful problems through in-depth study of ~~specific~~ mathematics and statistics topics~~.~~ that build on their prior knowledge and experiences. When presented in the context of relevant applications, abstract topics grow naturally out of the need to describe or represent the patterns that emerge. In general, ~~emphasis on~~ the meaning, use, and ~~use~~communication of mathematical and statistical ideas must ~~increase, and attention~~be emphasized. Attention to rote memorization and manipulation must decrease.

~~The content~~AMATYC's Standards for Content elaborates on the inclusion of threads throughout the curriculum related to numeracy, symbolism and algebra, geometry and measurement, functions, discrete mathematics, statistics and probability, and deductive proof. The standards that follow are not meant to outline a set of courses. Rather, they are strands to be included in ~~an introductory~~any post-secondary mathematics ~~program~~pathways in whatever structural form ~~it~~they may take. The specific themes were selected so that ~~adult students~~learners can develop the knowledge and skills needed to ~~function as productive workers and~~be discerning citizens ~~as well as~~, making data-based decisions and evaluating mathematical and statistical arguments. Students should also be equipped to pursue more advanced study in mathematics and other disciplines.

Standard C-1: ~~Number Sense~~ Numeracy

Students will accurately process, interpret, and communicate numerical information.

"Numeracy is the ability to process, interpret, and communicate numerical, quantitative, spatial, statistical, even mathematical, information, in ways that are appropriate for a variety of contexts, and that will enable a typical member of the culture or subculture to participate effectively in activities that they value." (Evans, 2000) Students should be able to identify and perform appropriate arithmetic operations, ~~**as well as reason and draw conclusions from numerical information.**~~

~~Number sense includes the ability to perform arithmetic operations, to~~ estimate reliably, ~~to~~ judge the reasonableness of numerical results, ~~to~~ understand orders of magnitude, ~~and to~~ think proportionally~~. Suggested topics include pattern~~

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~~recognition, data representation and interpretation, estimation, proportionality, and comparison~~, and make sense of data (especially large data sets) to recognize patterns. This mathematical reasoning may be enhanced through the use of technology.

Standard C-2: Symbolism and Algebra

Students will be able to interpret algebraic symbols, translate ~~problem situations~~problems into ~~their~~appropriate symbolic representations, and use those representations ~~to solve problems~~ to effectively answer questions and make predictions.

Students will move beyond concrete numerical operations ~~to~~and use ~~abstract concepts~~algebraic thinking and symbols to solve problems. Students will represent mathematical situations ~~symbolically and use~~ using a combination of appropriate ~~algebraic~~symbolic, graphical, and numerical methods to form conjectures about the problems. ~~Suggested topics~~Applications of algebraic thinking include derivation of formulas, translation of realistic problems into mathematical statements, conversion between different representations, and the solution of equations by appropriate ~~graphical, numerical, and algebraic~~ methods.

Standard C-3: Geometry and Measurement

Students will develop a spatial and measurement sense, learn to visualize and use geometric models, recognize measurable attributes, and use and convert units of measure.

Geometry is the study of visual patterns. Every physical object has a shape, so every physical object is geometric. Furthermore, mathematical objects can be ~~pictured~~represented geometrically. For example, real numbers are ~~pictured~~represented on a number line, forces are ~~pictured~~represented with vectors, and statistical distributions are ~~pictured~~represented with the graphs of curves. ~~Modern~~The use of dynamic geometry software ~~allows~~provides for efficient integration of geometric concepts throughout the curriculum ~~using~~, allowing students to more effectively visualize geometric ~~visualization.~~representations.

Students will demonstrate their abilities to visualize, compare, and transform objects~~.~~ using geometric representations. Students will develop a spatial sense including the ability to draw ~~one ,~~(either by hand or with the use of technology) one-dimensional , two~~-~~,~~-~~dimensional, and three-dimensional ~~objects~~shapes from different perspectives, and extend ~~the~~a concept, such as vectors, to higher dimensions. Their knowledge of geometry will enable them to determine ~~particular~~ dimensions, area, perimeter, and volume ~~involving~~of common plane and solid figures. Suggested topics might include comparison of geometric objects (including congruence and similarity), graphing, prediction from graphs, measurement, and vectors.

Standard C-4: Function

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Students will demonstrate understanding of the concept of function by several means ~~(verbally,~~ numerically, graphically, ~~and~~ symbolically~~)~~, and verbally - and **incorporate it as a central theme into their use of mathematics.**

Key curricular issues continue to stimulate dialogue and educational research. Since the National Research Council recommended in 1989 that "If it does nothing else, undergraduate mathematics should help students develop function sense..." (National Research Council, 1989), considerable research has been conducted on what it means for students to have an understanding of function. Studies report that a well-developed understanding of function correlates closely with success in calculus, as well as facilitating the transition to advanced mathematical thinking (Tall, 1992). In addition, faculty continue to search for methods to develop a student's understanding of the concept of variable. Students who are able to view variables as representing quantities whose values change dynamically along a continuum have been shown to have ready access to fundamental ideas, such as rate of change and limits, and exhibit higher levels of achievement in mathematics. (Ursini, S., & Trigueros, M., 1997, Jacobs, S., 2002)

Students will know when a relation is a function. Students will use function notation and perform operations on functions. Students will interpret functional relationships between two or more variables~~,~~ and formulate such relationships when presented in ~~data sets, and transform functional information from one representation to another.~~ tabular, graphical, symbolic, or verbal representations as well as convert between representations. Suggested topics include generalization about families of functions, transformations of functions, use of functions to model realistic problems, and the behavior of functions.

Standard C-5: Discrete Mathematics

Students will be able to recognize and use discrete mathematical algorithms and develop combinatorial abilities in order to solve problems of finite character and enumerate sets without direct counting.

~~Problem situations~~This standard provides guidance for incorporating topics from discrete mathematics courses (which may require precalculus or calculus as prerequisites) into introductory college mathematics courses. Applications in the social and behavioral sciences, business, computing, and other areas frequently do not exhibit the continuous nature ~~so readily~~commonly treated by techniques ~~traditionally~~ studied in introductory college mathematics pathways. Rather, ~~the problems~~these applications involve discrete objects and focus on ~~determining a count~~logic and enumeration (Dossey, 1991; Hart, 1991). ~~This standard does not imply that recently developed college courses in discrete mathematics are included in introductory college mathematics. Such courses commonly require precalculus or calculus as prerequisites.~~ The standard echoes the recommendations made in the NCTM *Standards* (NCTM, ~~1989~~2008) and in *Reshaping College Mathematics* (Siegel, 1989); namely, the conceptual framework of discrete mathematics should be integrated throughout the introductory mathematics ~~curriculum~~pathways, as appropriate, in order to improve students' problem-solving skills and prepare them for the study of higher levels of

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mathematics as well as for their careers. ~~Topics~~Suggested topics in discrete mathematics may include set theory, logic, graph theory, game theory, algorithms, proofs, sequences, series, permutations, combinations, recursion, ~~difference equations,~~ linear programming, finite graphs, voting systems, and matrices.

Standard C-6: Statistics and Probability ~~and Statistics~~

Students will ~~analyze~~use data to inform decisions and ~~use probability and statistical models to make inferences about real-~~understand the world ~~situations~~around them.

The basic concepts of ~~probability and descriptive and inferential~~ statistics, data science, and probability should be integrated throughout the ~~introductory college mathematics~~ curriculum ~~at an intuitive level.~~using relevant contexts and appropriate technology. Students ~~will gather, organize, display,~~ should recognize and describe variability, take variability into account when making decisions, as well as make and ~~summarize data. They will draw conclusions or make predictions from the~~communicate data ~~and assess the relative chances for certain events happening.~~ based arguments. Suggested topics include ~~basic sampling techniques, tabulation techniques~~appropriate methods for collecting data, creating and interpreting ~~charts and graphs, data transformation, curve fitting, measures of center and dispersion, simulations, probability laws, and sampling distributions.~~
data visualizations, sampling variability, drawing conclusions from sample data, modeling, applications of probability, and the ethical use of data.

Standard C-7: Deductive Proof

Students will appreciate the deductive nature of mathematics as an identifying characteristic of the discipline~~,~~; recognize the roles of definitions, axioms, and theorems~~,~~; and identify and construct valid deductive arguments.

The ~~dependence~~use of ~~mathematics on~~ deductive proof in mathematics sets it apart as a unique area of human endeavor. ~~While not being the main focus of instruction in introductory college mathematics~~Where appropriate to enhance student understanding of mathematical concepts, mathematical proofs, including indirect proofs and mathematical induction, will be introduced ~~where they will enhance student understanding of mathematical concepts~~. Students will engage in exploratory activities that will lead them to form statements of conjecture, test them by seeking counterexamples, and identify and, in some instances, construct arguments verifying or disproving the statements. A variety of proof techniques, including the use of manipulatives, diagrams, and pictures to create proofs without words or symbols, should also be encouraged.

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STANDARDS FOR CONTENT

AMATYC takes the position that to truly understand mathematics and statistics one must know it conceptually, contextually, and procedurally and know that problem solving is the heart of doing mathematics. The successful problem solver can view the world from a mathematical perspective (Schoenfeld, 1992).

Students develop the ability to solve meaningful problems through in-depth study of mathematics and statistics topics that build on their prior knowledge and experiences. When presented in the context of relevant applications, abstract topics grow naturally out of the need to describe or represent the patterns that emerge. In general, the meaning, use, and communication of mathematical and statistical ideas must be emphasized. Attention to rote memorization and manipulation must decrease.

AMATYC's Standards for Content elaborates on the inclusion of threads throughout the curriculum related to numeracy, symbolism and algebra, geometry and measurement, functions, discrete mathematics, statistics and probability, and deductive proof. The standards that follow are not meant to outline a set of courses. Rather, they are strands to be included in any post-secondary mathematics pathways in whatever structural form they may take. The specific themes were selected so that learners can develop the knowledge and skills needed to be discerning citizens, making data-based decisions and evaluating mathematical and statistical arguments. Students should also be equipped to pursue more advanced study in mathematics and other disciplines.

Standard C-1: Numeracy

Students will accurately process, interpret, and communicate numerical information.

"Numeracy is the ability to process, interpret, and communicate numerical, quantitative, spatial, statistical, even mathematical, information, in ways that are appropriate for a variety of contexts, and that will enable a typical member of the culture or subculture to participate effectively in activities that they value." (Evans, 2000) Students should be able to identify and perform appropriate arithmetic operations, estimate reliably, judge the reasonableness of numerical results, understand orders of magnitude, think proportionally, and make sense of data (especially large data sets) to recognize patterns. This mathematical reasoning may be enhanced through the use of technology.

Standard C-2: Symbolism and Algebra

Students will be able to interpret algebraic symbols, translate problems into appropriate symbolic representations, and use those representations to effectively answer questions and make predictions.

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Students will move beyond concrete numerical operations and use algebraic thinking and symbols to solve problems. Students will represent mathematical situations using a combination of appropriate symbolic, graphical, and numerical methods to form conjectures about the problems. Applications of algebraic thinking include derivation of formulas, translation of realistic problems into mathematical statements, conversion between different representations, and the solution of equations by appropriate methods.

Standard C-3: Geometry and Measurement

Students will develop a spatial and measurement sense, learn to visualize and use geometric models, recognize measurable attributes, and use and convert units of measure.

Geometry is the study of visual patterns. Every physical object has a shape, so every physical object is geometric. Furthermore, mathematical objects can be represented geometrically. For example, real numbers are represented on a number line, forces are represented with vectors, and statistical distributions are represented with the graphs of curves. The use of dynamic geometry software provides for efficient integration of geometric concepts throughout the curriculum, allowing students to more effectively visualize geometric representations.

Students will demonstrate their abilities to visualize, compare, and transform objects using geometric representations. Students will develop a spatial sense including the ability to draw (either by hand or with the use of technology) one-dimensional , two-dimensional, and three-dimensional shapes from different perspectives, and extend a concept, such as vectors, to higher dimensions. Their knowledge of geometry will enable them to determine dimensions, area, perimeter, and volume of common plane and solid figures. Suggested topics might include comparison of geometric objects (including congruence and similarity), graphing, prediction from graphs, measurement, and vectors.

Standard C-4: Function

Students will demonstrate understanding of the concept of function by several means - numerically, graphically, symbolically, and verbally - and incorporate it as a central theme into their use of mathematics.

Key curricular issues continue to stimulate dialogue and educational research. Since the National Research Council recommended in 1989 that “If it does nothing else, undergraduate mathematics should help students develop function sense...” (National Research Council, 1989), considerable research has been conducted on what it means for students to have an understanding of function. Studies report that a well-developed understanding of function correlates closely with success in calculus, as well as facilitating the transition to advanced mathematical thinking (Tall, 1992). In addition, faculty continue to search for methods to develop a student’s understanding of the concept of variable. Students who are able to view variables as representing quantities whose values change dynamically along a continuum have been shown to have ready

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access to fundamental ideas, such as rate of change and limits, and exhibit higher levels of achievement in mathematics. (Ursini, S., & Trigueros, M., 1997, Jacobs, S., 2002)

Students will know when a relation is a function. Students will use function notation and perform operations on functions. Students will interpret functional relationships between two or more variables and formulate such relationships when presented in tabular, graphical, symbolic, or verbal representations as well as convert between representations. Suggested topics include generalization about families of functions, transformations of functions, use of functions to model realistic problems, and the behavior of functions.

Standard C-5: Discrete Mathematics

Students will be able to recognize and use discrete mathematical algorithms and develop combinatorial abilities in order to solve problems of finite character and enumerate sets without direct counting.

This standard provides guidance for incorporating topics from discrete mathematics courses (which may require precalculus or calculus as prerequisites) into introductory college mathematics courses. Applications in the social and behavioral sciences, business, computing, and other areas frequently do not exhibit the continuous nature commonly treated by techniques studied in introductory college mathematics pathways. Rather, these applications involve discrete objects and focus on logic and enumeration (Dossey, 1991; Hart, 1991). The standard echoes the recommendations made in the NCTM *Standards* (NCTM, 2008) and in *Reshaping College Mathematics* (Siegel, 1989); namely, the conceptual framework of discrete mathematics should be integrated throughout the introductory mathematics pathways, as appropriate, in order to improve students' problem-solving skills and prepare them for the study of higher levels of mathematics as well as for their careers. Suggested topics in discrete mathematics may include set theory, logic, graph theory, game theory, algorithms, proofs, sequences, series, permutations, combinations, recursion, linear programming, finite graphs, voting systems, and matrices.

Standard C-6: Statistics and Probability

Students will use data to inform decisions and understand the world around them.

The basic concepts of statistics, data science, and probability should be integrated throughout the curriculum using relevant contexts and appropriate technology. Students should recognize and describe variability, take variability into account when making decisions, as well as make and communicate data-based arguments. Suggested topics include appropriate methods for collecting data, creating and interpreting data visualizations, sampling variability, drawing conclusions from sample data, modeling, applications of probability, and the ethical use of data.

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Standard C-7: Deductive Proof

Students will appreciate the deductive nature of mathematics as an identifying characteristic of the discipline; recognize the roles of definitions, axioms, and theorems; and identify and construct valid deductive arguments.

The use of deductive proof in mathematics sets it apart as a unique area of human endeavor. Where appropriate to enhance student understanding of mathematical concepts, mathematical proofs, including indirect proofs and mathematical induction, will be introduced. Students will engage in exploratory activities that will lead them to form statements of conjecture, test them by seeking counterexamples, and identify and, in some instances, construct arguments verifying or disproving the statements. A variety of proof techniques, including the use of manipulatives, diagrams, and pictures to create proofs without words or symbols, should also be encouraged.

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Delegate Assembly Motion

To: AMATYC Delegate Assembly

Year: 2023

Subject: Intellectual Dev. Standards Update

Submitted by: Julie Phelps

Date Submitted: 09/22/23

Motion: That the AMATYC Delegate Assembly
approves the updates to the Standards for Intellectual Development.

Rationale:

The AMATYC Standards Team is responsible for establishing and implementing a process of regular review of the standards. The AMATYC standards documents were published in 1995 and many changes have taken place in the mathematics and statistics fields since then. This is an effort to update the Standards for Intellectual Development to align with the current trends of today.

Action taken by the Delegate Assembly on: 11/18/23

____**Approved**	____**Postponed Until** _____	____**Withdrawn**
____**Disapproved**	____**Returned for Further Study**	____**Other**

STANDARDS FOR INTELLECTUAL DEVELOPMENT

At the conclusion of the first two years of their ~~introductory collegiate~~ college studies, all students should have ~~developed~~progressed in their development of certain ~~general~~ intellectual ~~mathematical~~ abilities ~~as well as~~and of other competencies and knowledge. Introductory college courses ~~in English, psychology, chemistry, or history attempt~~across disciplines should be designed to broaden an existing educational foundation~~. In a similar way, an introductory college~~ and allow students to appreciate mathematics ~~program should help students see mathematics as an enriching and empowering discipline.~~
, statistics, and data science as powerful reasoning and general problem solving tools. AMATYC's Standards for Intellectual Development include the areas of problem solving, modeling, reasoning, connecting with other disciplines, communicating, using technology, developing mathematical prowess, and linking multiple representations.

Standard 1-1: Problem Solving

Students will engage in ~~**substantial mathematical**~~ **relevant, authentic problem solving and mathematical and statistical thinking.**

Students will use problem-solving strategies that require persistence, ~~the ability to recognize inappropriate~~analysis of assumptions, ~~and~~ intellectual risk taking ~~rather than simple procedural approaches.~~and application of appropriate procedures. These strategies should include posing questions; organizing information; ~~drawing diagrams~~constructing visual representations; solving similar, simpler problems; analyzing situations through trial and error, graphing, and modeling; and drawing conclusions by translating, illustrating, and verifying results. The students should be able to communicate and interpret their results.

Emphasizing problem solving will make mathematics more meaningful to students. The problems used should be relevant to the needs and interests of the students in the class. Such problems provide a context as well as a purpose for learning new skills, concepts, and theories.

Standard 1-2: Modeling

Students will learn mathematics and statistics through modeling real-world situations.

Students will participate in the mathematical and statistical modeling of situations from the world around them and use the models to make predictions and informed decisions. Swetz (1991) describes the mathematical modeling process as "(1) identifying the problem, including the conditions and constraints under which it exists; (2) interpreting the problem mathematically; (3) employing the theories and tools of mathematics to obtain a solution to the problem; (4) testing and interpreting the solution in the context of the problem; and (5) refining the solution techniques to obtain a 'better' answer to the

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problem under consideration, if necessary" (pp. ~~358-359). In some cases, faculty may select problem situations and ask students to collaborate on the development of models. In other cases, students may be asked to evaluate previously developed models. Does the model behave as intended in that the equations fit the assumptions of the model? How well does the model agree with the real world it is supposed to represent? Does the model perform well on a data set different from the one for which it was developed?~~ 358-359). The statistical modeling process is similar but also involves connecting data, chance, and context (Pfannkuch, et.al, 2018).

Whether students develop their own models or evaluate models that are given to them, they should look beyond how well a proposed model fits a set of data and attempt to provide contextual, mathematical, statistical, or ~~scientific re.as ns~~data-based reasons for why the model is valid~~.~~

~~**Standard 1-3: Reasoning**~~
~~**Students will expand their mathematical reasoning skills as they develop convincing mathematical arguments**~~.

Standard 1-3: Reasoning

Students will expand their mathematical and statistical reasoning skills as they develop convincing mathematical, statistical, and data-based arguments.

Students will regularly apply inductive and deductive reasoning techniques to build convincing mathematical, statistical, and/or data-based arguments. They will develop conjectures on the basis of ~~past experiences~~previous knowledge, data, and intuition and test these conjectures by using logic and deductive and inductive proof, by framing examples and counterexamples, and by probabilistic and statistical reasoning. They will ~~explore the meaning~~then draw appropriate conclusions and ~~role of mathematical identities, support them graphically or numerically, and verify them algebraically or geometrically. Finally~~communicate their argument convincingly. In addition, students will judge the validity of mathematical, statistical, and/or data-based arguments ~~and draw appropriate conclusions.~~
using the same reasoning skills.

Standard 1-4: Connecting ~~With~~with Other Disciplines

Students will develop the view that mathematics ~~is a~~ , statistics, and data science are growing ~~discipline,~~disciplines, are interrelated with human culture, and understand ~~its~~their connections to other disciplines.

If students are to gain a sense that mathematics ~~is a~~, statistics, and data science are growing ~~discipline~~disciplines, course content must include current and relatable topics ~~developed since the eighteenth century. Topics~~ such as algorithms needed for computer-based solution processes, the use of probability in understanding chance and randomization, modern approaches to statistical inference and data visualization, and the applications of non-Euclidean geometries. These topics lend themselves to ~~a~~

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discussiondiscussions of who developed the ideas, when they were developed, and what kind of human endeavors motivated their development., which reinforces recognition of math in all parts of life and cultures. Students will need to research sources other than standard mathematics textbooks to determineshould develop an appreciation of how mathematics providesand statistics provide a language for the sciences; playsplay a role in art, music, and literature; isare applied by economists; issocial scientists and practitioners in health care fields; are used in business and manufacturing; and has had an impact onhave impacted history.

Standard 1-5: Communicating

Students will acquiredevelop the ability to read, write, listen to, and speak the languages of mathematics, statistics, and data science.

Students will acquiredevelop the skills necessary to communicate mathematical ideas and procedures, and results using appropriate mathematical and statistical vocabulary and notation. Students will learndevelop the ability to read and listen to mathematical presentations and arguments with understanding.communicate the results of analyses through appropriate models and visualizations. Furthermore, mathematics, statistics, and data science faculty will adopt instructional strategies that develop both oral and written communication skills within a context of realauthentic applications relevant to the particular group of students.a diverse student population. As students learn to speak and write about mathematics, statistics, and data science, they develop mathematical poweracumen and become better prepared to use mathematicsthis knowledge and these skills beyond the classroom.

~~**Standard 1-6: Using Technology**~~

Standard 1-6: Using Technology

Students will use appropriate technology to enhance their mathematical thinking and conceptual understanding and to solve mathematical problems and judge the reasonableness of their results.

Students will develop an ability to use technology to enhance their study of mathematics in two ways. First,, statistics, and data science. Current technology can be used to aid in the understanding of mathematical principles. Shoaf-Grubbs (1994) found that graphing calculators provide "a means of concrete imagery that gives the student new control over her learning environment and over the pace of that learning process. It relieves the need to emphasize symbolic manipulation and computational skills and supports an active, exploration process of learning and understanding the , and visualization of concepts behind the mathematics" (p. 191). In general, studentsand the analysis of data. Students can use technology to test conjectures, explore ideas, and verify that theorems are true in specific instances. For example, students can solve quadratic equations and inequalities graphically and then use their knowledge of the graphical solution to clarify the algebraic approach (Hector, 1992).

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~~Second, students will use~~They should also embrace technology ~~naturally and routinely~~ as a tool to aid in the solution of ~~realistic mathematical~~authentic problems~~. "Those who use mathematics in the workplace accountants, engineers, scientists rarely use paper and pencil procedures anymore...Electronic spreadsheets, numerical analysis packages, symbolic computer systems, and sophisticated computer graphics have become the power tools of mathematics in industry" (NRC, 1989, p. l). In addition, graphing calculators, dynamic geometry software, matrix software, and statistical packages~~ and to validate those solutions. Students should be ~~included among the~~ able to judge the reasonableness and accuracy of the results generated by technology ~~staples to be used by students~~.

~~Technology should be used to enhance the study of mathematics but should not become the main focus of instruction. The amount of time that students spend learning how to use computers and calculators effectively must be compatible with the expected gain in learning mathematics.~~

Standard 1-7: Developing Mathematical ~~Power~~Prowess

Students will engage in rich experiences in the study of mathematics, statistics, data science, and related fields that encourage independent, nontrivial exploration ~~in mathematics,~~ and will develop and reinforce tenacity and confidence in their abilities ~~to use mathematics,~~ and inspire them to ~~pursue the study of mathematics and related disciplines~~further their studies in these fields.

~~All students~~

Students will ~~have opportunities to be successful in doing meaningful mathematics that fosters~~ develop self-confidence and persistence~~. They will engage in~~ while engaging with mathematics, statistics, and data science problem-solving. These problems ~~that do~~will not always have unique ~~answers~~solutions but~~, rather,~~ will provide experiences that develop the ability to conduct independent explorations. At the same time, they will learn to ~~abstract mathematical principles in order to promote~~ transfer ~~of~~ problem-solving strategies ~~among~~to a variety of contexts (Druckman & Bjork, 1994) and ~~to better~~ appreciate mathematics, statistics, and data science as ~~a discipline. Furthermore, they will~~ disciplines. They will visualize themselves using mathematics and statistics effectively in their professional work and everyday lives. They will develop an awareness of careers in mathematics and related disciplines ~~and have a vision of themselves using mathematics effectively in.~~

Standard 1-8: Linking Multiple Representations

Students will select, use, and translate among mathematical and statistical representations—numerical, graphical, symbolic, and verbal—to organize information and solve problems using a variety of techniques.

Students will explore complex problems, using multiple approaches, and explain their ~~chosen fields.~~solutions in both oral and written form. Students will be motivated to go beyond the mastery of basic operations, statistical algorithms, or algebraic

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manipulations to a real understanding of how to use mathematics and statistics, the meaning of the answers, and how to interpret them.

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STANDARDS FOR INTELLECTUAL DEVELOPMENT

At the conclusion of the first two years of their college studies, all students should have progressed in their development of certain intellectual abilities and of other competencies and knowledge. Introductory college courses across disciplines should be designed to broaden an existing educational foundation and allow students to appreciate mathematics, statistics, and data science as powerful reasoning and general problem solving tools. AMATYC's Standards for Intellectual Development include the areas of problem solving, modeling, reasoning, connecting with other disciplines, communicating, using technology, developing mathematical prowess, and linking multiple representations.

Standard 1-1: Problem Solving

Students will engage in **relevant, authentic problem solving and mathematical and statistical thinking.**

Students will use problem-solving strategies that require persistence, analysis of assumptions, intellectual risk taking and application of appropriate procedures. These strategies should include posing questions; organizing information; constructing visual representations; solving similar, simpler problems; analyzing situations through trial and error, graphing, and modeling; and drawing conclusions by translating, illustrating, and verifying results. The students should be able to communicate and interpret their results.

Emphasizing problem solving will make mathematics more meaningful to students. The problems used should be relevant to the needs and interests of the students in the class. Such problems provide a context as well as a purpose for learning new skills, concepts, and theories.

Standard 1-2: Modeling

Students will learn mathematics and statistics through modeling real-world situations.

Students will participate in the mathematical and statistical modeling of situations from the world around them and use the models to make predictions and informed decisions. Swetz (1991) describes the mathematical modeling process as "(1) identifying the problem, including the conditions and constraints under which it exists; (2) interpreting the problem mathematically; (3) employing the theories and tools of mathematics to obtain a solution to the problem; (4) testing and interpreting the solution in the context of the problem; and (5) refining the solution techniques to obtain a 'better' answer to the problem under consideration, if necessary" (pp. 358-359). The statistical modeling process is similar but also involves connecting data, chance, and context (Pfannkuch, et.al, 2018).

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Whether students develop their own models or evaluate models that are given to them, they should look beyond how well a proposed model fits a set of data and attempt to provide contextual, mathematical, statistical, or data-based reasons for why the model is valid.

Standard 1-3: Reasoning

Students will expand their mathematical and statistical reasoning skills as they develop convincing mathematical, statistical, and data-based arguments.

Students will regularly apply inductive and deductive reasoning techniques to build convincing mathematical, statistical, and/or data-based arguments. They will develop conjectures on the basis of previous knowledge, data, and intuition and test these conjectures by using logic and deductive and inductive proof, by framing examples and counterexamples, and by probabilistic and statistical reasoning. They will then draw appropriate conclusions and communicate their argument convincingly. In addition, students will judge the validity of mathematical, statistical, and/or data-based arguments using the same reasoning skills.

Standard 1-4: Connecting with Other Disciplines

Students will develop the view that mathematics, statistics, and data science are growing disciplines, are interrelated with human culture, and understand their connections to other disciplines.

If students are to gain a sense that mathematics, statistics, and data science are growing disciplines, course content must include current and relatable topics such as algorithms needed for computer-based solution processes, the use of probability in understanding chance and randomization, modern approaches to statistical inference and data visualization, and the applications of non-Euclidean geometries. These topics lend themselves to discussions of who developed the ideas, when they were developed, and what kind of human endeavors motivated their development, which reinforces recognition of math in all parts of life and cultures. Students should develop an appreciation of how mathematics and statistics provide a language for the sciences; play a role in art, music, and literature; are applied by social scientists and practitioners in health care fields; are used in business and manufacturing; and have impacted history.

Standard 1-5: Communicating

Students will develop the ability to read, write, listen to, and speak the languages of mathematics, statistics, and data science.

Students will develop the skills necessary to communicate ideas and procedures, and results using appropriate mathematical and statistical vocabulary and notation. Students will develop the ability to communicate the results of analyses through appropriate models and visualizations. Furthermore, mathematics, statistics, and data science

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faculty will adopt instructional strategies that develop both oral and written communication skills within a context of authentic applications relevant to a diverse student population. As students learn to speak and write about mathematics, statistics, and data science, they develop acumen and become better prepared to use this knowledge and these skills beyond the classroom.

Standard 1-6: Using Technology

Students will use appropriate technology to enhance their thinking and conceptual understanding and to solve problems.

Students will develop an ability to use technology to enhance their study of mathematics, statistics, and data science. Current technology can be used to aid in the understanding, exploration, and visualization of concepts and the analysis of data. Students can use technology to test conjectures, explore ideas, and verify that theorems are true in specific instances. They should also embrace technology as a tool to aid in the solution of authentic problems and to validate those solutions. Students should be able to judge the reasonableness and accuracy of the results generated by technology.

Standard 1-7: Developing Mathematical Prowess

Students will engage in rich experiences in the study of mathematics, statistics, data science, and related fields that encourage independent, nontrivial exploration and will develop and reinforce tenacity and confidence in their abilities and inspire them to further their studies in these fields.

Students will develop self-confidence and persistence while engaging with mathematics, statistics, and data science problem-solving. These problems will not always have unique solutions but will provide experiences that develop the ability to conduct independent explorations. At the same time, they will learn to transfer problem-solving strategies to a variety of contexts (Druckman & Bjork, 1994) and appreciate mathematics, statistics, and data science as disciplines. They will visualize themselves using mathematics and statistics effectively in their professional work and everyday lives. They will develop an awareness of careers in mathematics and related disciplines.

Standard 1-8: Linking Multiple Representations

Students will select, use, and translate among mathematical and statistical representations—numerical, graphical, symbolic, and verbal—to organize information and solve problems using a variety of techniques.

Students will explore complex problems, using multiple approaches, and explain their solutions in both oral and written form. Students will be motivated to go beyond the mastery of basic operations, statistical algorithms, or algebraic manipulations to a real

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understanding of how to use mathematics and statistics, the meaning of the answers, and how to interpret them.

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Delegate Assembly Motion

To: AMATYC Delegate Assembly

Year: 2023

Subject: Pedagogy Standards Update

Submitted by: Julie Phelps

Date Submitted: 09/22/23

Motion: That the AMATYC Delegate Assembly approves the updates to the Standards for Pedagogy.

Rationale:

The AMATYC Standards Team is responsible for establishing and implementing a process of regular review of the standards. The AMATYC standards documents were published in 1995 and many changes have taken place in the mathematics and statistics fields since then. This is an effort to update the Standards for Pedagogy to align with the current trends of today.

Action taken by the Delegate Assembly on: 11/18/23

____**Approved**	____**Postponed Until** _____	____**Withdrawn**
____**Disapproved**	____**Returned for Further Study**	____**Other**

STANDARDS FOR PEDAGOGY

~~One of the most widely accepted ideas within the mathematics community is that students should understand mathematics as opposed to thoughtlessly grinding out answers.~~

~~But achieving this goal has been like searching for the Holy Grail. There is a persistent belief in the merits of the goal but designing school learning environments that successfully promote understanding has been difficult (Hiebert & Carpenter, 1992, p. 65)~~

~~Constructivism [see Crocker (1991)], which has become a popular theory for linking teaching to student learning, is based on the premise that knowledge cannot be "given" to students. Rather, it is something that they must construct for themselves. However, Resnick and Klopfer (1989) are quick to point out that constructivism does not imply that faculty should get out of the way and let students learn by themselves. All of the traditional questions remain: "how to present and sequence information, how to organize practice and feedback, how to motivate students, how to integrate laboratory activities with other forms of learning, and how to assess learning" (p. 4). 'The goal is to stimulate and nourish students' own mental elaborations of knowledge and to help them grow in their capacity to monitor and guide their own learning and thinking" (p. 4).~~

~~While constructivist theories may be interpreted differently by different educators and accepted to varying degrees, Brophy and Good (1986) point out that educational research shows that instructional strategies, be they constructivist or not, have a dramatic impact on what students learn. Two themes cut across research findings: "One is that academic success is influenced by the amount of time that students spend on appropriate academic tasks. The second is that students learn more efficiently when their teachers structure new information for them and help them to relate it to what they already know" (p. 366).~~

~~The standards for pedagogy that follow are compatible with the constructivist point of view. They~~ When planning a lesson, an instructor should start with the question "what should students do?", rather than "what should I do?" AMATYC supports the idea that learning is a social endeavor; therefore, it is important that we humanize the culture of learning mathematics, statistics, and data science (Yeh & Otis, 2019). The most impactful classrooms use learner-centered pedagogies, such as active learning, in a classroom environment that fosters a sense of community (CBMS, 2016; NCTM, 2014). Faculty must create frequent opportunities for students to develop and demonstrate conceptual, contextual, and procedural understanding of topics. This requires pedagogical practices that may include students using concrete tools to model abstract ideas, engaging in mathematical and statistical discourse, connecting different representations of the same idea, using prior knowledge to construct new knowledge, and understanding connections between the mathematics and statistics they are learning and what they already know.

Progress has been made toward the goal of more effectively teaching students to deeply understand mathematics and statistics; however, there is a need for more faculty

to consistently identify and use pedagogical strategies that promote equitable student learning. AMATYC's Standards for Pedagogy that follow recommend the use of instructional strategies that provide for student activity and student-constructed knowledge. Evidence-based strategies which can be incorporated by most teachers without requiring substantial faculty development are highlighted in these standards. Furthermore, the standards are in agreement with the instructional recommendations contained in ~~*Professional Standards for Teaching Mathematics* **(NCTM,** 1991).~~

~~**Standard P-1: Teaching with Technology**~~

~~**Mathematics faculty will model the use of appropriate technology in the teaching of mathematics so that students can benefit from the opportunities it presents as a medium of instruction.**~~

~~The use of technology is an essential part of an up-to-date curriculum. Faculty will use dynamic computer software to aid students in~~ *Common Vision* (2015). The standards include active learning ~~mathematics concepts and will model the appropriate use of technology as tools to solve mathematical problems. The effort spent on teaching students to use technology should be an investment in their future ability to use mathematics. Emphasis should be placed on the use of high-quality, flexible tools that enhance learning and tools they are likely to encounter in future work~~, making mathematical connections, multiple representations and approaches, teaching with technology, experiencing mathematics and statistics, and assessment of student learning.

~~In addition, faculty will use technology as a medium of instruction. Instructional media such as videotapes and computers allow students to progress at their own pace and make mistakes without fearing peer or professional judgment The use of technology within the instructional process should not require more time. In fact, the use of technology, coupled with a decreased emphasis in some traditional content areas, should provide the time that is needed to implement the needed reforms in mathematics education.~~

Standard P-1: Active Learning

Faculty will facilitate active learning that promotes increased and deeper mathematical and statistical reasoning abilities in students. Widespread implementation of high-quality active learning can help reduce or eliminate achievement gaps in STEM courses and promote equity in higher education.

The Conference Board of Mathematical Sciences (CBMS) uses the phrase "active learning to refer to classroom practices that engage students in activities, such as reading, writing, discussion, or problem solving, that promote higher-order thinking" and calls on institutions to incorporate active learning into post-secondary instruction (2016).

Active learning can be further defined by the following guiding principles: (1) students' deep engagement in mathematical thinking (PRoficiency), (2) instructors' interest in and use of student thinking (OWnership), (3) student-to-

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student interaction (Engagement), and (4) instructors' attention to equitable and inclusive practices (Student Success). Active learning benefits all students and offers disproportionately greater benefits for individuals from underrepresented groups by reducing achievement gaps in exam scores and passing rates (Laursen & Rasmussen, 2019)

Learning occurs when students construct their own knowledge through collaboration and when students are cognitively engaged with mathematics (Smith, et al, 2021). Participation in mathematical and statistical discourse, as well as writing and reading about mathematical and statistical ideas teaches students how to communicate about mathematics both orally and in writing. This creates a sense of community in the classroom and allows students to learn to work effectively to solve challenging problems. "For students from different socioeconomic, cultural, and educational backgrounds, and for students with different approaches to learning and social interaction, a supportive community of learners can be cultivated using AL techniques." (CBMS, 2016, para. 13) "Working in groups also provided less confident or less able students with opportunities to explain, question, agree and disagree and test their thinking in a less threatening context" (Sharma, 2015).

~~Standard P-~~2: Interactive and Collaborative Learning

~~Mathematics faculty will foster interactive learning through student writing, reading, speaking, and collaborative activities so that students can learn to work effectively in groups and communicate about mathematics both orally and in writing.~~

~~Mathematical literacy is achieved through an understanding of the signs, symbols, and vocabulary of mathematics. This is best accomplished when students have an opportunity to read, write, and discuss mathematical problems and concepts (NCIM, 1989). The following types of experiences will be encouraged in college classrooms: cooperative learning (Crocker, 1992; Becker & Pence, 1994); oral and written reports presented individually or in groups; writing in journals; open nded projects; and alternative assessment strategies such as essay questions and portfolios (Leitzel, 1991; NCIM, 1991).~~

Standard P-~~3: Connecting with Other Experiences~~2: Making Mathematical Connections

~~Mathematics faculty~~Faculty will actively involve students in meaningful mathematics ~~problems~~work that ~~build upon their~~connects to students' experiences~~, focus~~ and focuses on broad mathematical and statistical themes~~, and~~ that build connections within branches of mathematics, and ~~between mathematics and~~with other disciplines ~~so that students~~. Students will view mathematics and statistics as ~~a connected whole~~ relevant to their lives.

~~Mathematics must not be presented as isolated rules and procedures. Students must have the opportunity to observe the interrelatedness of scientific and~~

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~~mathematical investigation and see first-hand how it connects to their lives. Students who understand the role that mathematics has played in their cultures and the contributions of their cultures to mathematics are more likely to persevere in their study of the discipline. Making mathematics~~ **Making mathematics and statistics relevant and meaningful is the collective responsibility of faculty, administrators, and producers of instructional materials.** ~~Administrators have the responsibility of supporting faculty in this effort.~~

~~**Standard P-4: Multiple Approaches**~~

~~**Mathematics faculty will model the use of multiple approaches-numerical, graphical, symbolic, and verbal-to help students learn a variety of techniques for solving problems.**~~

~~Mathematical power includes the ability to solve many types of problems. Solutions to complex problems require~~ Traditionally, there has been a ~~variety of techniques and the ability to work through open-ended problem situations (Pollak, 1987). College mathematics faculty will provide rich~~disconnect between classroom mathematics and real-world mathematics. Mathematics and statistics must not be presented as isolated sets of rules and procedures, but rather as disciplines that arose out of, and are connected to, the needs of other fields. Further, students should be encouraged to make explicit connections between mathematical concepts, including those that may have been traditionally compartmentalized. Topics learned in one branch of mathematics should be explicitly aligned with topics from another, e.g. how principles learned in arithmetic can be generalized to principles in algebra, which can then be connected to topics in geometry.

Students must have the opportunity to observe the interrelatedness between scientific and statistical, and mathematical investigation, and see first-hand how mathematics and statistics connect to their lives. Curriculum should include meaningful mathematics work that allow students to bring their experiences into the classroom. Authentic applications help students see how mathematics and statistics are relevant in their lives and in the world around them (Benson-O'Connor, 2019; GAISE, 2016).

Understanding that mathematics and statistics have relevance to their life and to the world in general improves student motivation to learn and ability to connect ideas. Students who understand the role that mathematics and statistics have played in their cultures and the contributions of their cultures to mathematics and statistics are more likely to persevere in their study of the discipline. Faculty should include aspects of mathematics history and contemporary mathematics that provide counterexamples to the pervasive Eurocentric bias found in modern mathematics. Instructional activities should provide examples of how mathematics and statistics are used in a variety of cultures, and by people of every race, ethnicity, gender identity, class, and other social groups. Additionally, instruction

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should be culturally relevant, culturally responsive, and culturally sustaining (Alim, 2017).

P-3 Multiple Problem Solving Strategies

Faculty should help students become flexible problem solvers by allowing students to discover multiple problem solving strategies and to identify efficient strategies.

Flexibility in problem solving is an important element of mathematical proficiency (CCSSI, 2012). Faculty should provide opportunities for students to discover their own problem solving strategies and reflect on them (Star & Rittle-Johnson, 2007). Flexibility develops from exposure to multiple methods, comparison of worked examples, prompting and direct instruction, invention of a second method for a previously solved problem, and the opportunity to collaborate with peers (Newton et al., 2020). Experience with multiple problem solving strategies helps students adaptively choose more efficient strategies based on the content or context of the problem (Rittle-Johnson & Star, 2007).

P-4 Multiple Representations of Mathematical Concepts

Faculty will provide opportunities for students to ~~explore complex problems, guide them to solutions through multiple approaches, and encourage both oral and written responses.~~**use, share, and make sense of multiple representations of mathematical and statistical ideas. These multiple representations may include words, equations, different algebraic notations, graphs, diagrams, models, manipulatives, and computer code.**

Mathematics and statistics are connected webs of knowledge where conceptual knowledge links the individual pieces of information. “The development of this conceptual knowledge can only be done so by the construction of relationships between pieces of information” (Hiebert, 1986). “The skills that are at the focal point of conceptual learning in mathematics are the ability to identify and express the same concept in different forms of representation, to choose the most appropriate representation from among the various representations, and to be aware of the advantages and disadvantages of the representations” (İncikabı, 2017).

Using multiple representations broadens and deepens the connections students make between concepts (Abell et al., 2018; Gleason & Hughes Hallett, 1992; Knill, 2009). This will motivate students to go beyond the mastery of basic operations to a ~~real~~deeper understanding of how to use mathematics and statistics, the meaning of the answers, and how to interpret them (NRC~~.~~., 1989~~).~~)

Standard P-5: Teaching with Technology

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Faculty will use appropriate technology to promote deeper student learning and will model the use of technology.

Technology is an integral part of modern mathematics and statistics instruction. Faculty should be purposeful in their selection of technology, considering how it aids learning mathematical, statistical, and data science ideas. Pedagogy will include the use of technology to solve, model, and investigate mathematical and statistical problems and will provide students with opportunities to develop conceptual understanding. Emphasis should be placed on the use of high-quality, flexible, accessible technologies that enhance learning. The use of tools that students are likely to encounter in future work and careers, such as statistical software and web-based apps, is essential.

Standard P-6: Experiencing Mathematics and Statistics
~~**Mathematics faculty**~~
Faculty will provide learning activities~~, including projects and apprenticeships~~ beyond the scope of the classroom that promote independent thinking and ~~require sustained effort and time so that students will have the confidence to access and use needed mathematics and other technical information independently, to form conjectures from an array of specific examples, and to draw conclusions from general principles~~challenge students to persistently pursue efforts over an extended time period.

~~Mathematics faculty will assign~~Faculty should seek opportunities to expand student knowledge of how mathematics and statistics are used beyond the scope of the classroom by providing learning activities, including open-ended ~~classroom and laboratory~~ projects~~.~~ and research opportunities. In addition, they ~~will~~should help their institutions form partnerships with area ~~business~~businesses and ~~industry~~industries to develop opportunities for students to have realistic career experiences (Reich, 1993). Such activities will enable students to acquire the confidence to access and use needed technical information, and to independently ~~use mathematics in appropriate and sensible ways.~~form conjectures from an array of specific examples, and to draw conclusions from general principles.

Standard P-7: Assessment of Student Learning

Faculty will incorporate multiple strategies for formative and summative assessments to inform future pedagogical practices and to help students recognize their current understanding.

Formative and summative assessments are complementary tools for assessing the progression of student learning and informing instruction. Formative assessment benefits students and faculty by helping them recognize students' current knowledge and setting goals for future understanding. Formative assessment takes place regularly during a term and is designed to be low-stakes and informative. Any activity that gives students an opportunity to engage with

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feedback to improve their understanding is an opportunity for formative assessment. Another goal of formative assessment is to inform teaching practices and strategies to best meet the needs of learners. Good formative assessment produces significant, and often substantial, learning gains (Black & William, 2005).

Formative assessment is most effective when the following principles are applied (Gehrtz, Brantner, & Andrews, 2022; Purcell, 2014; Yale University, 2021).

- Regularly refer to the learning objectives and explicitly connect them to the learning activities.
- Watch and listen to students as they work to understand student thinking before intervening. Ask open-ended questions that provide opportunities for students to further describe and explain their thinking and reasoning.
- Use qualitative oral and written comments that help students recognize what they understand and what they need to do to increase understanding.
- Adapt teaching plans as a result of the formative assessment outcomes.
- Useful and timely feedback is essential for assessments to lead to learning (GAISE, 2016)

Summative assessments are for the purpose of evaluating student learning and assigning grades. It is especially important to ensure that the assessment aligns with the goals and expected outcomes of the instruction. Instructors should use multiple forms of summative assessment such as projects, portfolios, and demonstration of understanding in authentic situations. Instructors should consider the following principles when designing summative assessments (Blonder, et al.; Yale University, 2021).

- Design clearly understood questions that align with learning objectives.
- Provide an opportunity for students to demonstrate their understanding of how the foundational concepts of the course are interrelated and can be applied beyond the course contexts.
- Provide opportunities to close the gap between current and desired performance, such as opportunities for resubmission.
- Consider matters of equity to ensure all students have opportunities to succeed. This may require flexible structure in conducting assessments. Flexible assessments, such as team quizzes, take home assignments, and projects provide more equity and inclusion in math courses.

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Traditionally, there has been a disconnect between classroom mathematics and real-world mathematics. Mathematics and statistics must not be presented as isolated sets of rules and procedures, but rather as disciplines that arose out of, and are connected to, the needs of other fields. Further, students should be encouraged to make explicit connections between mathematical concepts, including those that may have been traditionally compartmentalized. Topics learned in one branch of mathematics should be explicitly aligned with topics from another, e.g. how principles learned in arithmetic can be generalized to principles in algebra, which can then be connected to topics in geometry.

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Standard P-6: Experiencing Mathematics and Statistics

Faculty will provide learning activities beyond the scope of the classroom that promote independent thinking and challenge students to persistently pursue efforts over an extended time period.

Faculty should seek opportunities to expand student knowledge of how mathematics and statistics are used beyond the scope of the classroom by providing learning activities, including open-ended projects and research opportunities. In addition, they should help their institutions form partnerships with area businesses and industries to develop opportunities for students to have realistic career experiences (Reich, 1993). Such activities will enable students to acquire the confidence to access and use needed technical information, and to independently form conjectures from an array of specific examples, and to draw conclusions from general principles.

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