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DENVER BYLAWS

Mechanical Engineering Technology

Industrial Advisory Board

March 2015

Article I - Name

The official name of this organization shall be the Mechanical Engineering Technology Industrial Advisory Board. (MET-IAB)

Article II - Mission

The Metropolitan State University of Denver (MSUDenver) MET-IAB reviews the overall health and status of the Mechanical Engineering Technology (MET) program, advises the faculty on the general direction of the program, critically reviews the program strategic plans, advises the program on new faculty hire, identifies potential sources of supplemental funding, and last but not least, helps to develop, maintain and innovate the curricula.

Article III - Objective

1. Improve the direct applicability of the MET program to that of local industry.
2. Foster relations between MSUDenver and Industry.
3. Serve the MSUDenver MET program as required by ABET/Engineering Technology Accreditation Commission (ETAC) who is the national accrediting body for the program.

ABET/ETAC outlines how technology programs should be assessed and continually improved. This outline is embodied in the nine General Criteria, plus the Program Criteria that are specific to each program.

2015-2016 Criteria for Accrediting Engineering Technology Programs

Criterion 1. Students

Student performance must be evaluated. Student progress must be monitored to foster success in attaining student outcomes, thereby enabling graduates to attain program educational objectives. Students must be advised regarding curriculum and career matters.

The program must have and enforce policies for accepting both new and transfer students, awarding appropriate academic credit for courses taken at other institutions, and awarding appropriate academic credit for work in lieu of courses taken at the institution. The program must have and enforce procedures to ensure and document that students who graduate meet all graduation requirements.

The role of the board is to review and comment on the department's processes and procedures for advising and monitoring student progress and success with the program.

Criterion 2. Program Educational Objectives

The program must have published program educational objectives that are consistent with the mission of the institution, the needs of the program's various constituencies, and these criteria. There must be a documented, systematically utilized, and effective process, involving program constituencies, for the periodic review of these program educational objectives that ensures they remain consistent with the institutional mission, the program's constituents' needs, and these criteria.

The role of the board is to review and comment on the department's educational objectives.

Criterion 3. Student Outcomes

The program must have documented student outcomes that prepare graduates to attain the program educational objectives. **There must be a documented and effective process for the periodic review and revision of these student outcomes.**

For purposes of this section, broadly defined activities are those that involve a variety of resources; that involve the use of new processes, materials, or techniques in innovative ways; and that require a knowledge of standard operating procedures. Narrowly defined activities are those that involve limited resources, that involve the use of conventional processes and materials in new ways, and that require a knowledge of basic operating processes.

For baccalaureate degree programs, these student outcomes must include, but are not limited to, the following learned capabilities:

- a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
- b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
- c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
- d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
- e. an ability to **function effectively as a member or leader** on a technical team;
- f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;
- g. **an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;**
- h. **an understanding of the need for and an ability to engage in self-directed continuing professional development;**
- i. **an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;**
- j. **a knowledge of the impact of engineering technology solutions in a societal and global context; and**
- k. a commitment to quality, timeliness, and continuous improvement.

The role of the board is to review and comment on the department's processes and procedures for assessing and evaluating program outcomes.

Criterion 4. Continuous Improvement

The program must regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations must be systematically utilized as input for the continuous improvement of the program. Other available information may also be used to assist in the continuous improvement of the program.

The role of the board is to review and comment on the department's processes and procedures for continuous improvement.

Criterion 5. Curriculum

The curriculum must effectively develop the following subject areas in support of student outcomes and program educational objectives.

Mathematics The program must develop the ability of students to apply mathematics to the solution of technical problems.

a. Associate degree programs will, at a minimum, include algebra and trigonometry at a level appropriate to the student outcomes and program educational objectives.

b. Baccalaureate degree programs will include the application of integral and differential calculus or other mathematics above the level of algebra and trigonometry appropriate to the student outcomes and program educational objectives.

Technical Content The technical content of the program must focus on the applied aspects of science and engineering and must:

a. Represent at least 1/3 of the total credit hours for the program but no more than 2/3 of the total credit hours for the program.

b. Include a technical core that prepares students for the increasingly complex technical specialties they will experience later in the curriculum.

c. Develop student competency in the use of equipment and tools common to the discipline.

Physical and Natural Science The basic science content of the program must include physical or natural science with laboratory experiences as appropriate to the discipline.

The Integration of Content Baccalaureate degree programs must provide a capstone or integrating experience that develops student competencies in applying both technical and non-technical skills in solving problems.

Cooperative Education When used to satisfy prescribed elements of these criteria, credits based upon cooperative/internships or similar experiences must include an appropriate academic component evaluated by the program faculty.

Advisory Committee An advisory committee with representation from organizations being served by the program graduates must be utilized to periodically review the program's curriculum and advise the program on the establishment, review, and revision of its program educational objectives. The advisory committee must provide advisement on current and future aspects of the technical fields for which the graduates are being prepared.

The role of the board is to review and comment on the department curriculum.

Criterion 6. Faculty

Each faculty member teaching in the program must have expertise and educational background consistent with the contributions to the program expected from the faculty member. The competence of faculty members must be demonstrated by such factors as education, professional credentials and certifications, professional experience, ongoing professional development, contributions to the discipline, teaching effectiveness, and communication skills. Collectively, the faculty must have the breadth and depth to cover all curricular areas of the program.

The faculty serving in the program must be of sufficient number to maintain continuity, stability, oversight, student interaction, and advising. The faculty must have sufficient responsibility and authority to improve the program through definition and revision of program educational objectives and student outcomes as well as through the implementation of a program of study that fosters the attainment of student outcomes.

The role of the board is to review and comment on faculty and faculty new hires.

Criterion 7. Facilities

Classrooms, offices, laboratories, and associated equipment must be adequate to support attainment of the student outcomes and to provide an atmosphere conducive to learning. Modern tools, equipment, computing resources, and laboratories appropriate to the program must be available, accessible, and systematically maintained and upgraded to enable students to attain the student outcomes and to support program needs. Students must be provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories available to the program. The library services and the computing and information infrastructure must be adequate to support the scholarly and professional activities of the students and faculty.

The role of the board is to review and comment on the department facilities and equipment, including capital expenditures.

Criterion 8. Institutional Support

Institutional support and leadership must be adequate to ensure the quality and continuity of the program.

Resources including institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate to meet program needs. The resources available to the program must be sufficient to attract, retain, and provide for the continued professional development of a qualified faculty. The resources available to the program must be sufficient to acquire, maintain, and operate infrastructures, facilities and equipment appropriate for the program, and to provide an environment in which student outcomes can be attained.

The role of the board is to review and comment on the department's support and resources.

Criterion 9. Program Criteria

Each program seeking accreditation from the Engineering Technology Accreditation Commission of ABET must demonstrate that it satisfies all Program Criteria implied by the program title.

Program Criteria for Mechanical Engineering Technology and Similarly Named Programs

Lead Society: American Society of Mechanical Engineers

Applicability

These program criteria apply to engineering technology programs that include mechanical or similar modifiers in their titles.

Objective

An creditable program in Mechanical Engineering Technology will prepare graduates with knowledge, problem solving ability, and hands-on skills to enter careers in the design, installation, manufacturing, testing, evaluation, technical sales, or maintenance of mechanical systems. Level and scope of career preparation will depend on the degree level and specific program orientation. Graduates of associate degree programs typically have strengths in specifying, installing, fabricating, testing, documenting, operating, selling, or maintaining basic mechanical systems, whereas baccalaureate degree graduates typically have strengths in the analysis, applied design, development, implementation, or oversight of more advanced mechanical systems and processes.

Outcomes

The mechanical engineering technology discipline encompasses the areas (and principles) of materials, applied mechanics, computer-aided drafting/design, manufacturing, experimental techniques/procedure, analysis of engineering data, machine/mechanical design/analysis, conventional or alternative energy system design/analysis, power generation, fluid power, thermal/fluid system design/analysis, plant operation, maintenance, technical sales, instrumentation/control systems, and heating, ventilation, and air conditioning (HVAC), among

others. As such, programs outcomes, based on specific program objectives, may have a narrower focus with greater depth, selecting fewer areas, or a broader spectrum approach with less depth, drawing from multiple areas. However, all programs must demonstrate an applied basis in engineering mechanics/sciences.

Associate degree programs must demonstrate that graduates can apply specific program principles to the specification, installation, fabrication, test, operation, maintenance, sales, or documentation of basic mechanical systems depending on program orientation and the needs of their constituents.

Baccalaureate degree programs must demonstrate that graduates can apply specific program principles to the analysis, design, development, implementation, or oversight of more advanced mechanical systems or processes depending on program orientation and the needs of their constituents.

The role of the board is to review and comment on the program at large.

Article IV – MET-IAB Duties and Effectiveness

An effective MET-IAB board should:

1. Be broad-based and composed primarily of practicing engineers and senior technical personnel with active interests in the institution and the program it offers and with intimate knowledge of the current work of technical engineering personnel and the work they are likely to do in the near future.
2. Industrial advisory boards can contribute significantly to the growth and development of engineering technology programs as a means of assuring technical currency of the program and maintaining close liaison with the supporting and employing industries.
3. Meet at least twice per year, Fall and Spring, with the administration and the faculty to discuss industry trends, program needs, progress, and problems, and to recommend solutions. Records and minutes of this board should be maintained and the data collected will be used in the assessment and program evaluation process.
4. Periodically review program offerings and course content to ensure that the current and future needs of technical personnel in industry are being met.
5. Promote the dialog between students, faculty, industry, and professional societies.
6. Assist in the recruitment of a competent faculty and of potentially capable students.
7. Assist in the placement of graduates.
8. Assist in obtaining financial aid and part-time employment for needy students.
9. Assist in obtaining financial and material resources for the institution and in assuring a high level of community awareness and support of the program offerings.

Article V – Organization and Membership

Section - 1. Nominations to the IAB will typically be made through the Engineering

Technology Department Chair, faculty program coordinators and IAB members.

Section - 2. Membership requires a commitment on the part of the individual to serve for a minimum of two years on the board. The term of the IAB service will be two (2) years. A member will have a maximum of three (3) continuous terms of service. A former member can be re-appointed after “sitting out” one term.

Section - 3. MSUDenver shall provide members formal recognition of membership so that meeting attendance shall be facilitated from member employers.

Section - 4. The board IAB minimum size shall be eight (8) members. The IAB maximum size shall be sixteen (16) members. Membership shall consist of members drawn from industrial representatives and professional personnel. At-large or non-Colorado resident membership is encouraged to add breadth to the scope of the membership.

Section - 5. Membership is not subject to delegation.

Section - 6. Termination will be by term expiration with no provisions made for terminating inactive members.

Section - 7. Ex officio membership shall automatically be extended to Electrical Engineering Technology program faculty and staff, and the administrative members of the Metropolitan State University of Denver (MSUDenver), including, but not limited to, the Chair of the Engineering Technology Department, the Dean of the School of Professional Studies, Provost and Vice- President of Academic Affairs, and President of MSUDenver and other staff and support entities as deemed necessary.

Article VI – Officers and Elections

Section - 1. Officers of the board shall consist of the Chair, Vice-Chair and Secretary. No Treasurer position is included, as this board has no financial role.

Section - 2. The officers shall be elected during the annual IAB meeting. Officers shall serve for two-year terms. Nominee must give their consent to serve in that capacity. Voting may be done by electronic means, open voting or secret ballot. A candidate for office shall be deemed elected by a majority of all ballots cast.

Section - 3. The Chair shall be the authorized leader. The Chair will preside at all meetings.

Section - 4. The Vice Chair shall preside at all meetings in the absence of the Chair.

Section - 5. The Secretary shall record the minutes of each meeting of the board. Support staff from the MET program may assist with this function.

Section - 6. Should a vacancy occur in any office, an interim officer should be determined by the board until such time as an election is held.

Article VII - Regular Meetings

Section - 1. Meetings shall be held, at a minimum, twice per year. Additional meetings may be scheduled as determined by the board members. Meetings will typically be held within the state of Colorado.

Section - 2. The quorum of the board shall not be less than 1/3 of the active, resident (state

of Colorado) members.

Section - 3. Meetings shall be on a regularly scheduled basis with enough advance notice to allow attendance. These meeting times will be published to the appropriate department or program web site by engineering technology staff. Adjustments to the schedule will be approved by the board. Unless an emergency at least thirty days notice for additional meetings outside of the schedule will be given. Engineering technology staff will assist in reminder notices for meetings.

Section - 4. Meetings shall be subject to the laws and policies of the State of Colorado.

Article VIII – Voting Rights

Section - 1. At-large members will have voting rights on board business. However at-large members will not be counted in the members present at a meeting for quorum purposes, unless they are physically present.

Section - 2. At-large members may add comments to minutes of meetings via electronic means such as email.

Section - 3. Non-present members including at-large members shall not affect the outcome of a vote taken of members present at the scheduled meeting unless said vote ends in a tie. Non-present members may make their vote known via electronic means prior to a vote on an issue but only considered as a tie-breaker.

Section - 4. Issues may be placed before the membership for a vote via electronic means such as electronic mail. A majority of those members voting electronically shall be required to consider the issue as approved. The electronic voting will include at-large members for electronic votes on issues. A defined time period of one week shall apply to the receipt of all electronic votes submitted by email.

Section - 5. Affiliate (Adjunct) Faculty have from time to time come from the IAB membership, in said cases the member shall retain voting rights.

Section - 6. Ex officio members shall not have voting rights but may comment on board measures being brought for a vote.

Article IX – Engineering Technology Department Board

Section - 1. The Department of Engineering Technology (ETS) shall use as an Industrial Advisory Board the joint membership of the Civil, Electrical, and Mechanical Industrial Advisory Boards. Meetings of the ETS Board shall in most instances require just representation from each program board, however on special occasions the membership may be required to meet in it entirety.

Section - 2. The ETS Board shall meet a minimum of once a year. Meetings of the ETS Board may coincide at the same day of a program IAB meeting.

Section - 3. The bylaws of the individual engineering technology program boards shall be the same except in naming of the boards.

Article X - Amendments

Section - 1. Bylaws of the individual engineering technology program boards shall be amended as a whole.

Section - 2. Equal representation of individual program boards shall exist for a bylaw amendment vote to occur. Members of an individual program board may be asked to abstain from voting in order to obtain equal representation. The abstaining member(s) shall be chosen by the individual program board.

Section - 3. All proposed amendments to these IAB Bylaws shall be approved by a simple majority of the members present at Department of Engineering Technology Industrial Advisory Board meeting, where no majority exists from any individual program board. An electronic vote on amendments maybe scheduled, pursuant to the above section on equal representation.

Article XI - Status

This boards are organized for advisory purposes only and not for profit. The boards shall have no financial role in holding any monies or property. Any financial responsibilities will be addressed within the organizational structure provided by MSUDenver.

Article XII - Parliamentary Authority

The current edition of *Roberts Rules of Order* shall be the parliamentary authority for all matters of procedure not specifically covered by the bylaws of the board.