

NASM Competencies Summary

Degree: The **BM in Music Technology, a professional undergraduate degree**

Essential Note: Items below are excerpts from the *NASM Handbook*. Items 1 through 4 indicate the content and natures of the competencies expected of those graduating with the above degree. Items 5 and 6 indicate recommendations for competency development.

Only the *Handbook in its entirety* contains all standards and guidelines applicable to and used by all phases of NASM membership reviews. In the text below "H." indicates the location of the excerpted text in the Handbook; the term "(All)" indicates standards applicable to all professional undergraduate music degrees including music technology; "(Music Technology)" indicates specific standards for that major.

Item 1. (All)

Common Body of Knowledge and Skills (H.VIII.B.)

1. Performance. Students must acquire:

- a. Technical skills requisite for artistic self-expression in at least one major performance area at a level appropriate for the particular music concentration.
- b. An overview understanding of the repertory in their major performance area and the ability to perform from a cross-section of that repertory.
- c. The ability to read at sight with fluency demonstrating both general musicianship and, in the major performance area, a level of skill relevant to professional standards appropriate for the particular music concentration.
- d. Knowledge and skills sufficient to work as a leader and in collaboration on matters of musical interpretation. Rehearsal and conducting skills are required as appropriate to the particular music concentration.
- e. Keyboard competency.
- f. Growth in artistry, technical skills, collaborative competence and knowledge of repertory through regular ensemble experiences. Ensembles should be varied both in size and nature.

Normally, performance study and ensemble experience continue throughout the baccalaureate program.

2. Musicianship Skills and Analysis. Students must acquire:

- a. An understanding of the common elements and organizational patterns of music and their interaction, the ability to employ this understanding in aural, verbal, and visual analyses, and the ability to take aural dictation.
- b. Sufficient understanding of and capability with musical forms, processes, and structures to use this knowledge and skill in compositional, performance, analytical, scholarly, and pedagogical applications according to the requisites of their specializations.
- c. The ability to place music in historical, cultural, and stylistic contexts.

3. **Composition/Improvisation.** Students must acquire a rudimentary capacity to create original or derivative music. It is the prerogative of each institution to develop specific requirements regarding written, electronic, or improvisatory forms and methods. These may include but are not limited to the creation of original compositions or improvisations, variations or improvisations on existing materials, experimentation with various sound sources, the imitation of musical styles, and manipulating the common elements in non-traditional ways. Institutional requirements should help students gain a basic understanding of how to work freely and cogently with musical materials in various composition-based activities, particularly those most associated with the major field.
4. **History and Repertory.** Students must acquire basic knowledge of music history and repertoires through the present time, including study and experience of musical language and achievement in addition to that of the primary culture encompassing the area of specialization (see Section III.L.).
5. **Synthesis.** While synthesis is a lifetime process, by the end of undergraduate study students must be able to work on musical problems by combining, as appropriate to the issue, their capabilities in performance; aural, verbal, and visual analysis; composition/improvisation; and history and repertory.

Item 2. (All)

Results (H.VIII.C.)

Upon completion of any specific professional undergraduate degree program:

1. Students must demonstrate achievement of professional, entry-level competence in the major area, including significant technical mastery, capability to produce work and solve professional problems independently, and a coherent set of artistic/intellectual goals that are evident in their work. A senior project or presentation in the major area is required in many concentrations, and strongly recommended for all others.
2. Students are expected to have the ability to form and defend value judgments about music, and to communicate musical ideas, concepts, and requirements to professionals and laypersons related to the practice of the major field.

Item 3. (Music Technology)

Essential Competency Areas, Experiences, Opportunities, and Requirements (H.IX.G.2.)

(in addition to those stated for all degree programs):

Please note:

The following standards refer to music technology as a field, and to areas of music technology. Areas of music technology include, but are not limited to, manipulation and recording of sound, live performance, electroacoustic production, live electronics, audio in its multiple forms (film, game, video, concert and event, audio design, etc.), music pedagogy, research, equipment design and installation, and the development of computer-based tools for music production.

No institution can develop professional-level competency in all of these areas in the context of a professional undergraduate program. Therefore, each institution offering the Bachelor of Music in Music Technology must meet the standards below where indicated in terms of music technology in general, and otherwise in terms of one or more specific areas of music technology chosen by the institution as its area(s) of focus in music technology.

Students must develop a professional level of competency in at least one specific area, and a basic level of competency in a second area. Experiences, opportunities, requirements, and supporting resources must also be compatible with the specific focus area(s) chosen.

The competencies outlined may be developed in various ways. The list of competencies below should not be construed as requiring a separate course for each competency.

a. Essential Competencies

- (1) Basic understanding of the scope, integrative nature, and various functions of music technology as a field, including acquaintance with various applications of music technology in music, technological development, research, pedagogy, and in other fields.
- (2) Knowledge of and ability to use various terminologies and procedures in music technology, music, and technology, and their combinations as employed in and associated with the work of music technology. This includes, but is not limited to, their respective vocabularies of practice, ways work is conceptualized, developed, synthesized, and finalized, and phases of production, presentation, and/or distribution.
- (3) Ability to solve music technology problems, including (a) problem identification, information gathering, solution development, and testing, and (b) knowledge and skill to produce case-specific decisions about what is useful, usable, effective, and desirable during the course of music technology project development and production.
- (4) Ability to describe and respond to the needs or expectations of users, audiences, and/or contexts associated with doing professional work in two or more areas of music technology.
- (5) Advanced capabilities in specific areas of musicianship consistent with the music technology areas that constitute the degree program's focus. Aural skills are essential. Abilities to apply advanced knowledge of the properties of musical structures and processes to solving music technology problems are essential.
- (6) Fundamental knowledge of current technologies and technological principles widely applicable to music technology, including but not limited to those associated with recording, manipulating, and presenting music and sound, signal flow and processing, music communication protocols, synthesis and interface technologies, sound synthesis, and interactive and generative media.
- (7) The ability to use industry standard technologies at a professional level to achieve goals and objectives associated with specific areas of music technology (e.g. Section 4.C.2.b. below). These goals may be in terms such as mastery of production techniques, artistic expression, support for work in other fields, relationships with other technologies and media, and so forth.
- (8) Ability to apply knowledge of fundamental science, engineering, and math concepts and other aspects of the science of sounds and the electrical manipulations of sounds in music technology situations.
- (9) Basic understanding of connections among music, technology, music technology, and culture, including the evolution of music technology, the impact of technology on music and culture, technological influences on multiple musical styles, including contemporary styles, and their cultural contexts, and information and means for projecting future possibilities in music technology; and basic understanding of these connections with regard to current and emerging Internet- and network-based programs, services, and environments related to the creation, sharing, and distribution of music.
- (10) Knowledge of the basic principles, laws, regulations, and ethical considerations and practices associated with music technology and intellectual property as it is both acquired and created by individuals working in the music technology program.
- (11) Comprehensive capabilities to use and integrate the above competencies in at least one area of music technology to produce professional-level work in at least one area, and basic level work in a second area.

- b. Relevant Competencies for Area Programs** (*in addition to those stated above for all music technology programs, and those stated in Section VIII. for all professional degree programs*):
- (1) In music technology programs with specific orientation to **recording, manipulation, and live performance**, competencies include, but are not limited to, advanced knowledge and technical competence in using industry-standard recording and other types of music technology studios and equipment; expertise in the use of music, digital, and other technological interfaces; high levels of aural and music analysis skills; ability to apply scientific knowledge of acoustics, electrical advanced capabilities in audio recording and sound manipulation; capabilities in audio engineering, studio sound, and live performance sound.
 - (2) In music technology programs with specific orientations to creative production of **electroacoustic music and live electronics**, competencies include, but are not limited to, advanced knowledge and technical competence in using and creating with technologies, protocols, and techniques associated with analog and digital instruments and various forms of synthesis; interfaces; programming language(s); interactive and generative media; and networks of digital and other instruments; and, the ability to conceive, create, develop, and produce real-time and recorded performances using digital and emerging technologies. Competence in using and creating with various keyboard-based and/or non-keyboard-based controllers and user interfaces is essential. An understanding of compositional principles, logics, narrative structures, and strategies is required.
 - (3) In music technology programs with specific orientations to one or more **audio applications**, competencies include, but are not limited to, knowledge of the nature, purpose, and the way work is created for the application and the roles of music technology to conceptualization, development, and production; advanced knowledge of and ability to use industry-standard technology, equipment, labs, and studios to produce work in or for the application; the ability to apply science, computer engineering, and software development skills associated with the application. Experiences should include working together in teams that replicate, insofar as possible, professional working patterns associated with the application.
 - (4) In music technology programs with specific orientations to music technology in **education**, competencies include, but are not limited to, advanced knowledge of and ability to use technological means to conceive and develop specific products associated with instruction and evaluation; the ability to create interactive applications for educational purposes; thorough understanding of the elements, natures, and content of musical instruction in areas such as aural perception, music theory, music history, music teacher preparation, composition, and improvisation, and their relationships to the capabilities of current and emerging technology.
 - (5) In music technology programs with specific orientations to **psychology-based research**, competencies include, but are not limited to, advanced knowledge of and ability to use technological means for capturing records of behaviors, conducting measurements and assessments, and producing analyses in fields such as acoustics and psychoacoustics, the neuroscience of music, music perception, music cognition, and music performance. Fundamental understanding of the natures and content of research areas and protocols in two or more of these fields is essential. Experiences should include using technology in research settings for research purposes.
 - (6) In music technology programs with specific orientations to **engineering and the creation of technological means**, competencies include, but are not limited to, basic knowledge of the science, engineering, and math disciplines integral to the conceptualization, design, development, and production of music technology software, hardware, and equipment. A sample set of these fields includes acoustics, acoustical engineering, electrical engineering, computer science and technology, digital sound processing, and the mathematics required to learn and apply the content of these fields. Advanced knowledge of two or more specific fields of music work in terms of software, hardware, and equipment needs is essential. The ability to conceive and design viable basic solutions to one or more kinds of engineering problems is essential. For

standards regarding the representation of music and music technology programs with engineering content, see Appendix I.F. and Sections 2.G., 3.A., and II.I.

- (7) For music technology programs with **other areas of focus**, competency expectations must be consistent with the content, process, technologies, and product expectations and other requirements associated with professional work in that area.

c. Specific Standards, Competencies, and Guidelines for Supportive and General Studies (*in addition to those stated for all professional undergraduate degrees in music*):

- (1) Consistent with the purposes and requirements of the program, institutions must require studies that support knowledge development in disciplines with direct applications to or connections with the practice of music technology. These disciplines may include, but are not limited to, mathematics, electrical or computer engineering, acoustics, or other sciences. Specific content choices, and the specific approaches to or locations of such studies in courses or curricular structures are the prerogative of the institution.
- (2) Studies in mathematics, including college calculus if applicable, are required as may be necessary to support the needs of any electrical or computer engineering or other science-based course mandated by the program or the institution.
- (3) Studies in areas such as acoustics, computer science, engineering, physics, music business/industry, digital/interactive media, sound design, broadcast journalism, mass communication, film studies, cultural studies, mathematics, and expository writing is strongly recommended.

d. Experiences, Opportunities, and Project Requirements

- (1) Regular access to instruction and evaluation by faculty with the educational and professional backgrounds in music technology and associated disciplines to develop the competencies listed above both in general and in the music technology areas that are the focus of the degree. Appropriate backgrounds must include more than specific software or hardware skills. See Section II.E. and Section 5.A.
- (2) Regular access to appropriate technology, equipment, and staff necessary for the development and professional production of work in the music technology areas that are the focus of the degree. Consistent with the purposes and content of the program, technology and equipment must align with disciplinary/industry standards. See Sections II.F.G. and Section 5.B.
- (3) To ensure that opportunities can be fully realized, programs that require student purchase of computers should provide the technological infrastructure and staff to support use of privately owned machines in music technology workspaces, studios, and classrooms. The institution should be cognizant of industry preferences for certain operating systems, computer platforms, and software in setting computer purchase requirements and infrastructure support.
- (4) Regular experiences and advanced practicums associated with producing work in the primary focus area of music technology must be provided. Students must have sufficient time with studios and equipment to develop their knowledge and skills and to complete required projects.
- (5) Opportunities to work with a variety of musical genres and styles are strongly recommended.
- (6) Internships in industry or the equivalent are strongly recommended.

- (7) A final project demonstrating competence in at least one area of music technology must be required for graduation. The final project and other demonstrations of competence at senior year must show readiness to produce work in one or more music technology areas at a professional level.

e. Guidelines

- (1) Normally, the institution maintains a program of regular consultation with professional practitioners in music technology.
- (2) Normally, institutions maintain a counseling program to provide students with a realistic assessment of job opportunities and professional requirements as appropriate to individual aptitude, professional interest, and academic progress.
- (3) Normally, institutions make a thorough assessment of each student's performance during internship experiences and use such assessment in the counseling process in general and with areas of music technology specialization that constitute the degree program's focus.

Item 4. (All)

General Studies Competencies (H.VIII.A.6.)

- a. Competencies.** Specific competency expectations are defined by the institution. Normally, students holding a professional undergraduate degree in music are expected to have:
 - (1) The ability to think, speak, and write clearly and effectively.
 - (2) An informed acquaintance with fields of study beyond music such as those in the arts and humanities, the natural and physical sciences, and the social sciences.
 - (3) A functional awareness of the differences and commonalities regarding work in artistic, scientific, and humanistic domains.
 - (4) Awareness that multiple disciplinary perspectives and techniques are available to consider all issues and responsibilities including, but not limited to, history, culture, moral and ethical issues, and decision-making.
 - (5) The ability to identify possibilities and locate information in other fields that have bearing on musical questions and endeavors.

Item 5. (Music Technology)

Specific Guideline for General Studies (H.IX.G.2.c.)

See Item 3., above (H.IX.G.2.c.)

Item 6. (All)

Recommendations for Professional Studies (H.VIII.D.)

Students engaged in professional undergraduate degrees in music should have opportunities to:

1. Gain a basic understanding of the nature of professional work in their major field. Examples are: organizational structures and working patterns; artistic, intellectual, economic, technological, and political contexts; and development potential.
2. Acquire the skills necessary to assist in the development and advancement of their careers.
3. Develop teaching skills, particularly as related to their major area of study.
4. Continue to develop improvisational skills whether as an aspect of composition, musicianship, or performance studies.

5. Experience a broad range of repertory through attendance at events such as recitals, concerts, opera and music theatre productions, and other types of performances.
6. Explore areas of individual interest related to music in general or to the major. Examples are music bibliography, notations, aesthetics, acoustics, performance practices, specialized topics in history, musicology, ethnomusicology, analysis, and technology.
7. Explore multidisciplinary issues that include music.
8. Practice synthesis of a broad range of musical knowledge and skills, particularly through independent study that involves a minimum of faculty guidance, where the emphasis is on evaluation at completion (see Section III.G.)

Please Note:

For specific information regarding curricular structure, see H.IX.G.1. Normally, at least 65% of a 120 semester hour program is in music studies to ensure that time is available to develop the requisite competencies.

For a table of contents for all standards, see *NASM Handbook*.