

# Music and Technology, B.S.

## Overview

Carnegie Mellon University's Music and Technology program was established in 2009 as a joint project between three units: the School of Music, the School of Computer Science, and the Department of Electrical and Computer Engineering. Building on this interdisciplinary approach, Carnegie Mellon University's Music and Technology program equips students with the skills and knowledge they need to become the future leaders of the music industry. Students at the undergraduate and graduate levels can hone their skills in an interdisciplinary environment, focusing on a chosen area of study, such as Recording Technology, Audio Engineering, Computer Music, Music Composition, Music Performance, and Music Theory. Our expert faculty promotes a collaborative approach to cutting-edge education, providing our students with both specialized knowledge and a broad range of skills to foster development in the field of music.

### Please note:

Students should consult with the Senior Academic Advisor at least once a year to ensure they are making adequate progress or if they need to depart from the suggested degree plan. The Senior Academic Advisor, Faculty Advisor(s), and/or instructors of record can advise about appropriate course sections where necessary.

The degree plans below are the intended sequence of all required courses for successful and on-time degree completion. Students **must** complete the First-Year fall semester of coursework as indicated below.

Placement in harmony and solfege courses is determined by examination prior to matriculation. Students will then complete the series in sequence.

For the Global, Cultural, and Diverse (GCD) Perspectives requirement, the following courses qualify: any History course 79-100 or higher; any English course 76-200 or higher; any Modern Languages course 82-100 or higher.

| Bachelor of Science Programs in Music                                 | Minimum Units Required for Graduation |
|-----------------------------------------------------------------------|---------------------------------------|
| Bachelor of Science in Music and Technology (Music Concentration)     | 382                                   |
| Bachelor of Science in Music and Technology (Technical Concentration) | 370                                   |

## Bachelor of Science in Music and Technology (Music Concentration)

**NOTE:** Students following the Music Concentration are required to complete at least 4 semesters each of Ensemble and Studio. The degree plan here places those in the first four semesters.

### First-Year Fall (52 units)

|                                         | Units |
|-----------------------------------------|-------|
| 57-101 Introduction to Music Technology | 6     |
| 57-149 Basic Harmony I                  | 9     |
| or 57-152 Harmony I                     |       |
| 57-161 Eurhythmics I                    | 3     |
| 57-180 Basic Solfege I                  | 3     |
| or 57-181 Solfege I                     |       |
| or 57-185 Advanced Solfege I            |       |
| 57-337 Sound Recording                  | 6     |
| 57-338 Sound Editing and Mastering      | 6     |
| 57-4XX Ensemble                         | 6     |
| 57-5XX Studio                           | 9     |
| 57-570 Music and Technology Seminar     | 1     |
| 99-101 Core@CMU                         | 3     |

### First-Year Spring (58 units)

|                                                         |    |
|---------------------------------------------------------|----|
| 15-112 Fundamentals of Programming and Computer Science | 12 |
| 57-150 Basic Harmony II                                 | 9  |
| or 57-153 Harmony II                                    |    |

|                                     |   |
|-------------------------------------|---|
| 57-162 Eurhythmics II               | 3 |
| 57-182 Solfege II                   | 3 |
| or 57-186 Advanced Solfege II       |   |
| 57-438 Multitrack Recording         | 9 |
| 57-4XX Ensemble                     | 6 |
| 57-5XX Studio                       | 9 |
| 57-570 Music and Technology Seminar | 1 |
| 76-1XX First-Year Writing Course    | 9 |

### Second-Year Fall (52 units)

|                                             |    |
|---------------------------------------------|----|
| 15-122 Principles of Imperative Computation | 12 |
| 21-127 Concepts of Mathematics              | 12 |
| 57-173 Survey of Western Music History      | 9  |
| 57-183 Solfege III                          | 3  |
| or 57-487 Advanced Solfege III              |    |
| 57-4XX Ensemble                             | 6  |
| 57-5XX Studio                               | 9  |
| 57-570 Music and Technology Seminar         | 1  |

### Second-Year Spring (53 units)

|                                                            |    |
|------------------------------------------------------------|----|
| 18-100 Introduction to Electrical and Computer Engineering | 12 |
| 21-120 Differential and Integral Calculus                  | 10 |
| 33-141 Physics I for Engineering Students                  | 12 |
| 57-184 Solfege IV                                          | 3  |
| or 57-488 Advanced Solfege IV                              |    |
| 57-4XX Ensemble                                            | 6  |
| 57-5XX Studio                                              | 9  |
| 57-570 Music and Technology Seminar                        | 1  |

### Third-Year Fall (38 units)

|                                                          |    |
|----------------------------------------------------------|----|
| 21-122 Integration and Approximation                     | 10 |
| 57-151 Counterpoint in Theory and Application            | 6  |
| 57-257 Orchestration I                                   | 6  |
| 57-347 Electronic and Computer Music                     | 6  |
| 57-570 Music and Technology Seminar                      | 1  |
| XX-XXX Global, Cultural, and Diverse Perspectives Course | 9  |

### Third-Year Spring (38 units)

|                                       |   |
|---------------------------------------|---|
| 15-322 Introduction to Computer Music | 9 |
| 33-114 Physics of Musical Sound       | 9 |
| 57-258 20th 21st Century Techniques   | 6 |
| 57-408 Form and Analysis              | 6 |
| 57-570 Music and Technology Seminar   | 1 |
| XX-XXX Elective                       | 9 |

### Fourth-Year Fall (41 units)

|                                                           |    |
|-----------------------------------------------------------|----|
| 18-202 Mathematical Foundations of Electrical Engineering | 12 |
| 57-570 Music and Technology Seminar                       | 1  |
| 57-571 Music and Technology Project                       | 12 |
| XX-XXX Elective                                           | 9  |
| XX-XXX Cognition, Choice, and Behavior Course             | 9  |

### Fourth-Year Spring (43 units)

|                                                                      |    |
|----------------------------------------------------------------------|----|
| 18-290 Signals and Systems                                           | 12 |
| 57-570 Music and Technology Seminar                                  | 1  |
| 57-571 Music and Technology Project                                  | 12 |
| XX-XXX Elective                                                      | 9  |
| XX-XXX English, History, Languages, Philosophy, or Psychology Course | 9  |

## Bachelor of Science in Music and Technology (Technical Concentration)

### First-Year Fall (55 units)

|                                                               | Units |
|---------------------------------------------------------------|-------|
| 15-112 Fundamentals of Programming and Computer Science       | 12    |
| 57-101 Introduction to Music Technology                       | 6     |
| 57-149 Basic Harmony I                                        | 9     |
| or 57-152 Harmony I                                           |       |
| 57-161 Eurhythmics I                                          | 3     |
| 57-180 Basic Solfege I                                        | 3     |
| or 57-181 Solfege I                                           |       |
| or 57-185 Advanced Solfege I                                  |       |
| 57-189 Introduction to Repertoire and Listening for Musicians | 3     |
| 57-337 Sound Recording                                        | 6     |
| 57-338 Sound Editing and Mastering                            | 6     |
| 57-570 Music and Technology Seminar                           | 1     |
| 99-101 Core@CMU                                               | 3     |

### First-Year Spring (58 units)

|                                                |    |
|------------------------------------------------|----|
| 15-122 Principles of Imperative Computation    | 12 |
| 21-127 Concepts of Mathematics (15-122 co-req) | 12 |
| 57-150 Basic Harmony II                        | 9  |
| or 57-153 Harmony II                           |    |
| 57-162 Eurhythmics II                          | 3  |
| 57-182 Solfege II                              | 3  |
| 57-438 Multitrack Recording                    | 9  |
| 57-570 Music and Technology Seminar            | 1  |
| 76-1XX First-Year Writing Course               | 9  |

### Second-Year Fall (50 units)

|                                               |    |
|-----------------------------------------------|----|
| 21-120 Differential and Integral Calculus     | 10 |
| 33-141 Physics I for Engineering Students     | 12 |
| 57-151 Counterpoint in Theory and Application | 6  |
| 57-173 Survey of Western Music History        | 9  |
| 57-183 Solfege III                            | 3  |
| or 57-487 Advanced Solfege III                |    |
| 57-570 Music and Technology Seminar           | 1  |
| XX-XXX Elective                               | 9  |

### Second-Year Spring (52 units)

|                                                            |    |
|------------------------------------------------------------|----|
| 15-213 Introduction to Computer Systems                    | 12 |
| 15-322 Introduction to Computer Music                      | 9  |
| 18-100 Introduction to Electrical and Computer Engineering | 12 |
| 33-114 Physics of Musical Sound                            | 9  |
| 57-184 Solfege IV                                          | 3  |
| or 57-488 Advanced Solfege IV                              |    |
| 57-408 Form and Analysis                                   | 6  |
| 57-570 Music and Technology Seminar                        | 1  |

### Third-Year Fall (37 units)

|                                                           |    |
|-----------------------------------------------------------|----|
| 18-202 Mathematical Foundations of Electrical Engineering | 12 |
| 57-257 Orchestration I                                    | 6  |
| 57-289 Repertoire and Listening for Musicians II          | 3  |
| 57-347 Electronic and Computer Music                      | 6  |
| 57-570 Music and Technology Seminar                       | 1  |
| XX-XXX Global, Cultural, and Diverse Perspectives Course  | 9  |

### Third-Year Spring (44 units)

|                                                               |    |
|---------------------------------------------------------------|----|
| 18-220 Electronic Devices and Analog Circuits (33-142 co-req) | 12 |
| 18-290 Signals and Systems                                    | 12 |
| 21-122 Integration and Approximation (33-142 co-req)          | 10 |
| 57-258 20th 21st Century Techniques                           | 6  |
| 57-290 Repertoire and Listening for Musicians III             | 3  |
| 57-570 Music and Technology Seminar                           | 1  |

### Fourth-Year Fall (41 units)

|                                                |    |
|------------------------------------------------|----|
| 18-240 Structure and Design of Digital Systems | 12 |
| 57-570 Music and Technology Seminar            | 1  |
| 57-571 Music and Technology Project            | 12 |
| XX-XXX Elective                                | 9  |
| XX-XXX Cognition, Choice, and Behavior Course  | 9  |

### Fourth-Year Spring (43 units)

|                                                                      |    |
|----------------------------------------------------------------------|----|
| 57-570 Music and Technology Seminar                                  | 1  |
| 57-571 Music and Technology Project                                  | 12 |
| 15-2XX Elective in ECE or 18-3XX Elective in CS                      | 12 |
| XX-XXX Elective                                                      | 9  |
| XX-XXX English, History, Languages, Philosophy, or Psychology Course | 9  |