

B.A. IN MUSIC *PLUS* A SECONDARY MAJOR IN SOFTWARE ENGINEERING

- The B.A. degree in Music requires 120 credits.
 - 66 hours must be non-music credits.
 - 40 hours must be 300 or 400-level courses.
 - All music majors have Arts Event Attendance Requirements; for details, check <https://www.butler.edu/jca/for-current-students>.
- The double major of Music and Software Engineering will fulfill the following Areas of Inquiry in the University Core Curriculum: Perspectives of the Creative Arts, Analytic Reasoning, and the Indianapolis Community Requirement. In addition, the B.A. Music curriculum fulfills the Butler Cultural Requirement because of the arts event attendance requirements for all arts majors.
- Students are encouraged to add a track to their Software Engineering major; the additional requirements are listed at the end of the summary.
- The student will be assigned a Software Engineering advisor in addition to their Music advisor.

Semester 1

AM 021*	Keyboard Skills 1	1
<i>*Piano majors substitute AM 031 and AM 032 plus two credits of music electives for AM 021, 022, 023, 024.</i>		
AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
MT 101	Music Theory 1	3
MT 111	Aural Skills 1	1
FYS 101	First Year Seminar	3
WB ____	Well-Being	1
CS 151	Foundations of Computing 1	3
MA 106**	Calculus & Anal. Geo. 1	4

TOTAL Credit Hours: 19

Semester 2

AM 022	Keyboard Skills 2	1
AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
MT 102	Music Theory 2	3
MT 112	Aural Skills 2	1
FYS 102	First Year Seminar	3
CS 248	Obj-Orient Program & Data Str	5
CS 252	Foundations of Computing 2	3

TOTAL Credit Hours: 19

****Math placement test required; the student may need to take MA 101 (Algebra, 3 cr.) and/or MA 102 (Precalculus, 3 cr.) prior to MA 106. Students get credit for MA 106 if they receive a 4 or 5 on the Calculus AB AP exam; they receive credit for both MA 106 and MA 107 if they receive a 4 or 5 on the Calculus BC AP exam with a 4 or 5 on the AB subscore.**

Semester 3

AM 023	Keyboard Skills 3	1
AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
MT 201	Music Theory 3	3
MT 211	Aural Skills 3	1

Semester 4

AM 024	Keyboard Skills 4	1
AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
ME 330	Self-Represent for Musicians	1
MT 202	Music Theory 4	3

			MT 212	Aural Skills 4	1
GHS ____	Global and Historical Studies	3			
CS 333	Database Systems	3	CS 341	Advanced Data Structures	3
Language Elective		3	SE 361	Intro to Software Engineering	3
			Language Elective		3

Explanation: 6 hours of the same language at the 200-level or higher are required.

TOTAL Credit Hours:	17	18
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Semester 5

AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
MH 305	Music and Devotion	3
GHS ____	Global and Historical Studies	3
CS 311	Voc Exploration in Comp Sci	1
CS 321	Computer Organization	3
CS 382/3	Epics 2 Service Learning	2-3
CS 485	Computer Ethics	1

TOTAL Credit Hours:	16-17
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Semester 6

AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
MH 306	Music and Narrative	3
SW ____	The Social World	3
TI ____	Texts and Ideas	3
CS 351	Algorithms	3
MA 162	Elementary Statistics	3

18

Semester 7

AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
MH 307	Music, Globalization & Industry	3
SE 411	Internship Practicum	1
SE 461	Managing Software Dev	3
SE 463	Testing & Quality Assurance	3
CS ____	CS 435 or CS 441	3

TOTAL Credit Hours:	16
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Semester 8

AM ____	Major Instrument or Voice	2
ES ____	Major Ensemble	1
ME 430	E-Portfolio Capstone	0
MH 308-SJD	Music and Movement	3
NW ____	The Natural World	5
SE 412	Internship Reflection	2
SE 462	Modernizing Legacy Software	3
CS/SE ____	300/400-level Elective	3

19

SUMMARY

REQUIRED MUSIC COURSES:

Note: The 8-semester sequence shown above includes 4 additional semesters of Applied Music (8 credits) and 2 additional semesters of Major Ensemble (2 credits), in addition to the courses listed below. While not required in the B.A. degree, most music majors will take these additional classes for scholarship reasons.

AM 021,022,023,024	Keyboard Skills 1,2,3,4	4
<i>*Piano majors substitute AM 031 and AM 032 plus two credits of music electives.</i>		
AM ____	Major Instrument or Voice	8
ES ____	Major Ensemble	6
ME 330	Self-Representation for Musicians	1
ME 430	E-Portfolio Capstone	0
MH 305	Music and Devotion	3
MH 306	Music and Narrative	3
MH 307	Music, Globalization, and Industry	3
MH 308-SJD	Music and Movement	3
MT 101	Music Theory 1	3
MT 111	Aural Skills 1	1
MT 102	Music Theory 2	3
MT 112	Aural Skills 2	1
MT 201	Music Theory 3	3
MT 211	Aural Skills 3	1
MT 202	Music Theory 4	3
MT 212	Aural Skills 4	1
TOTAL		47 (plan shows 57 music credits per the note above)

UNIVERSITY CORE CURRICULUM:

FYS 101,102	First Year Seminar	3,3
GHS ____	Global and Historical Studies	3,3
NW ____	The Natural World	5
SW ____	The Social World	3
TI ____	Texts and Ideas	3
WB ____	Well-Being	1
TOTAL		24

COURSES REQUIRED FOR THE SOFTWARE ENGINEERING MAJOR:

CS 151	Foundations of Computing 1	3
CS 248	Object-Oriented Prog & Data Structures	5
CS 252	Foundations of Computing 2	3
CS 311	Vocational Exploration in Computer Science	1
CS 321	Computer Organization	3
CS 333	Database Systems	3
CS 341	Advanced Data Structures	3
CS 351	Algorithms	3
CS 382/383	Epics 2 Service Learning	2-3
CS 485	Computer Ethics	1
MA 106*	Calculus & Anal Geometry 1	4
MA 162	Elementary Statistics	3
SE 361	Introduction to Software Engineering	3

SE 411	Internship Practicum	1
SE 412	Internship Reflection	2
SE 461	Managing Software Development	3
SE 462	Modernizing Legacy Software	3
SE 463	Testing and Quality Assurance	3
ONE of the following, chosen from:		3
CS 435	Computer Networks	
CS 441	Organization of Programming Languages	
CS/SE ____	Elective numbered 300 or above	3
Language	6 hours of the same language at the 200-level or higher	
TOTAL		61-62

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ADDITIONAL COURSES REQUIRED FOR OPTIONAL TRACKS:

Artificial Intelligence Track

CS 445	Artificial Intelligence (3)
CS 446	Artificial Intelligence 2 (3)
CS 448	Deep Learning and Computer Vision (3)

Cybersecurity Track

CS 435	Computer Networks (3)
CS 439	Hacking: Ethics and Practice (3)
CS 458	Introduction to Cryptography and Cryptanalysis (3)

Game Design Track

CS 445/447	Artificial Intelligence/Computer Graphics (3)
SE 342	Game Mechanics and Narrative Design (3)
SE 463	Testing and Quality Assurance (3)