Consult the General Studies Request FAQ for more information and quick answers.

New permanent numbered courses must be submitted to the workflow in Kuali CM before a General Studies request is submitted here. The General Studies Council will not review requests ahead of a new course proposal being sent to the Senate.

Submission Information

College/School	Department/School
Herberger Institute for Design and the Arts (CHI)	School of Music, Dance and Theatre (CMUSIC)

Submission Type

New Request

Requested Effective Date

Spring 2025

ASU Request

Is this request for a permanent course or a topic?

Permanent Course

Subject Code	Course Number	Units/Credit Hours
MSC	115	3

Course Information

Enter the course catalog information, found in the web course catalog or Kuali CM.

Course Title

Music Production Fundamentals

Course Catalog Description

Introduces the basic tools and techniques of the "in the box" music production. Students begin to hone their production chops and create their own original and collaborative work in the process. Course is broken down into 4 modules: writing in the DAW, producing in the DAW, collaborating in the DAW and working in the DAW. Students experience a series of lectures to cover weekly topic(s); participate in in-class exercises and demos; and write, arrange and produce original material to be workshopped in class, both individually and collaboratively.

Enrollment Requirements (Prerequisites, Corequisites, and/or Antirequisites)

Credit is allowed only for MSC 115 or MSC 194 (Music Production Fundamentals)

Is this a crosslisted course?

No

Is this course offered by (shared with) another academic unit?

No

If this course or topic already carries a different General Studies Gold (not Maroon) designation than the one being requested, please check this box.

General Studies Gold Designation Request

Requested Designation

Quantitative Reasoning (QTRS)

Attach a representative syllabus for the course, including course learning outcomes and descriptions of assignments and assessments.

MSC115_GSgold_syllabus_917.docx

Quantitative Reasoning (QTRS)
Quantitative and computational reasoning is essential for success in 21st-century careers, for critically evaluating information in the age of "big data," for assessing the quality of arguments conveyed through digital media, for informed participation in community and social life, and for contributing to the formulation of effective solutions for achieving a sustainable and just future. Quantitative reasoning enables students to apply relevant mathematical, statistical, computational, and visualization methods in academic, social and personal settings.

In a quantitative reasoning course, students learn about data, data management, data summaries, data visualization, and the use of computational tools with data. Data can take many forms, including numerical data, textual data, images, and others. Students also learn about how quantitative reasoning can be used to make arguments clear, precise and verifiable. Finally, they learn to build quantitative models, make predictions, and communicate their findings based on available data. This may include some combination of mathematical, statistical, computational or network models, or visualizations.

Instructions: In the fields below, state the assignment, project, or assessment that will measure each learning outcome, and provide a description. The description should provide enough detail to show how it measures the learning outcome. If needed, more than one can be identified.

The proposal does not need to include all course assessments that measure a given learning outcome. The provided assessment should include sufficient detail to allow the subcommittee to make their evaluation. When appropriate, the same assessment can be listed for more than one learning outcome (e.g., a culminating project).

You may provide links to a document (Google Drive or Dropbox) that includes the relevant details for the assessment. Do not provide links to Canvas shells.

QTRS Learning Outcome 1: Understand variables, measurement and data, including how they can be used to pose and answer questions about society and nature, and to manipulate, organize, classify and visualize quantitative data.

Throughout the course students are required to demonstrate skills related to sequencing MIDI. Sequencing MIDI involves manipulating and organizing data in the form of musical notes and instructions for virtual instruments, similar to how variables and data are manipulated in other contexts. In addition to this, using virtual synthesizers and samplers requires an understanding of how data is processed and manipulated to create sounds. Also, audio and MIDI editing involve manipulating and organizing data to achieve desired musical results.

The "MIDI Sequencing and Grooves with Data Analysis" assignment directly aligns with the learning outcome of understanding variables, measurement, and data by requiring students to manipulate and analyze quantitative elements in music production. Students work with variables like note velocity, timing, and tempo to create contrasting drum loops for different song sections. Through data visualization in the DAW's MIDI editor, they organize and classify these variables, reflecting on how changes in measurements influence the feel and flow of the music. This assignment helps students pose and answer questions about how quantitative data (e.g., rhythmic density, tempo) impacts musical structure, encouraging them to manipulate and visualize data to enhance their track's organization and coherence.

Assignment: MIDI Sequencing and Grooves with Data Analysis

Objective: In your DAW (Digital Audio Workstation), create drum loops for two different sections of a track, focusing on how variables and measurements influence the patterns you create.

1. Drum Loop Creation:
0.a. Create one drum loop for a Verse section and another for a Chorus section (each at least 2 bars).
0.b. Optionally, create a third loop for a Pre-Chorus or Post-Chorus section.
0.c. Each section's drum loop(s) should contrast yet logically flow within the song.
0.d. If needed, recreate drum patterns from a favorite song to help you understand how professional tracks use these elements.
1. Data Analysis and Reflection:
0.a. Variables and Measurement: Identify and manipulate MIDI variables such as note velocity, timing (swing, quantization), and tempo. Reflect on how changes in these variables affect the groove and feel of the drum loops.
0.b. Data Visualization: Use the DAW's MIDI editor to visualize your drum patterns. Take screenshots of the MIDI grid for each section (Verse, Chorus, etc.) and include these in your submission.
0.c. Organization: Compare the differences in MIDI note placement, velocity, and rhythmic density between sections. How do these quantitative aspects (e.g., tempo, note length, subdivisions) create contrast and flow between sections?
1. Submission:
0.a. Include the DAW project file.
0.b. Submit screenshots or exports of the MIDI editor view for each section.
0.c. Write a 200-word reflection on how you manipulated variables and used measurements to organize your data and enhance the song's structure.

QTRS Learning Outcome 2: Evaluate arguments from everyday life or academic fields of study that are represented mathematically, statistically, computationally, or in visualizations.

In the Music Production Fundamentals course, students evaluate arguments represented mathematically, statistically, and computationally through various assignments. They analyze MIDI patterns visually and computationally in a DAW, interpret industry statistics on loudness and dynamic range, and apply mathematical models of audio compression to audio processing. These tasks require students to make informed decisions based on quantitative data, visualizations, and computational tools, ensuring they understand how mathematical and statistical representations impact real-world music production outcomes.

This assignment tasks students with analyzing industry-provided data on the "loudness wars," a term referring to the trend in the music industry toward producing increasingly louder tracks. Students examine key metrics, such as loudness levels—measured in LUFS (Loudness Units relative to Full Scale) and RMS (Root Mean Square, a statistical measure of the magnitude of a varying quantity)—and dynamic range, which is the difference between the quietest and loudest parts of a track. By analyzing the correlation between these variables over time, students draw conclusions about the impact of increased loudness on dynamic range, using tools to manipulate, organize, and visualize the quantitative data. The assignment emphasizes understanding how these technical terms and measurements can be used to explore and explain trends in the music industry. Students analyze industry-provided data, focusing on key metrics like loudness levels and dynamic range. These metrics are quantitative and require students to interpret numerical data, identify trends, and understand the mathematical relationships between variables.

The assignment is rooted in a real-world issue—the loudness wars in the music industry—making it relevant to both everyday life and academic study. Students are tasked with evaluating how industry practices and trends can be understood and critiqued through the lens of mathematical and statistical analysis.

Assignment: Analyzing Loudness Standards in the Recording Industry Over Time

Objective:
You will analyze industry statistics related to the loudness wars, focusing on the correlation between the increase in loudness and the decrease in dynamic range. Based on your analysis, you will draw conclusions and discuss the implications for the music industry.

Instructions:

1. Data Analysis:
0.a. Analyze the provided data and statistics, focusing on key metrics such as average loudness levels and dynamic range.
0.b. Examine how these variables have changed over time, paying particular attention to their correlation.
1. Drawing Conclusions:
0.a. Based on your analysis, draw conclusions about the relationship between loudness and dynamic range.
0.b. Answer the following questions in your conclusions:
0.b.i. How have loudness levels evolved over the years?

0.b.ii. To what extent has dynamic range decreased in correlation with increased loudness?
0.b.iii. What are the possible reasons for these trends, and what implications do they have for music production and consumption?

Submission:

1. Submit a report that includes your analysis, visualizations, and conclusions. Be sure to support your conclusions with data and provide clear explanations of your findings.

QTRS Learning Outcome 3: Formulate hypotheses, mathematical models or narratives that are consistent with quantitative data.

In the Music Production Fundamentals course, students consistently formulate hypotheses, mathematical models, or narratives based on quantitative data throughout various assignments. When creating MIDI patterns, they build rhythmic models using note lengths, velocities, and grid divisions. In analyzing loudness standards, students hypothesize correlations between loudness and dynamic range using industry data. They develop mathematical models of audio compression based in data derived from their own experiments with compressors.

In the assignment described below, students explore audio compression by developing and applying a mathematical model to describe how a compressor, an audio processing tool used to control the dynamic range of a signal, modifies input signals. The model is based on key parameters: the input signal x(t), output signal y(t), threshold T (the level above which compression occurs), and ratio R (the degree of reduction applied to the signal exceeding the threshold). Students calculate the output for various input signals using different threshold and ratio settings, graph the results, and predict how these settings will affect an audio file in a Digital Audio Workstation (DAW). They then compare their predictions with the actual audio processed through a compressor, analyzing the outcomes to understand the connection between the mathematical model and the real-world behavior of audio compression.

Assignment: Compression as a Mathematical Model

Objective:
Understand how a compressor modifies an audio signal through mathematical modeling and practical application in a DAW.

Part 1: Mathematical Modeling

1. Equation:
2. Describe how a compressor modifies an audio signal using the following mathematical model:

y(t)={x(t). if x(t)dT
y(t)={T+(x(t) T)/R. if x(t)>T

0.a. Parameters:
0.a.i. x(t): Input signal
0.a.ii. y(t): Output signal
0.a.iii. T: Threshold
0.a.iv. R: Ratio
1. Given Values:
2. Use the following values for x(t): 0, -1, -2, -4, -12, -18.
3. Scenarios:
4. Apply the above model for each x(t) value using the following threshold (T) and ratio (R) combinations:
0.a. Scenario 1: T=0,R=1
0.b. Scenario 2: T= 3, R=1
0.c. Scenario 3: T= 3, R=4
0.d. Scenario 4: T= 10, R=4
0.e. Scenario 5: T= 10 , R=8R
0.f. Scenario 6: T= 20T , R=8R
1. Graphing:
0.a. Plot the outcomes of each data set on a separate graph.
0.b. Use the input signal x(t) on the x-axis and the output signal y(t) on the y-axis.

Part 2: Practical Application in Your DAW

1. Setup:
0.a. Set up a compressor in your DAW to match the threshold (T) and ratio (R) settings for each of the six scenarios above. Note that the ratio in your compressor will be represented as an actual ratio (e.g., R=8 in the equation will be set as 8:1 on your compressor).
0.b. Choose an audio file with a wide dynamic range (including both very loud and very quiet parts).
1. Prediction:
0.a. Before listening to how the compressor affects the audio, predict the outcome based on the graphs and your analysis of the compression mathematical model.
1. Experiment:
0.a. Play the audio through your compressor for each scenario.
0.b. Listen carefully to how the compressor affects the dynamic range of the audio.
1. Analysis:
0.a. Compare your predictions based on the graph and the mathematical model to the actual effects of the compression on the audio.
0.b. Discuss any differences between your predictions and the actual results.

QTRS Learning Outcome 4: Communicate how quantitative data, interpretations, or models are connected to outcomes, predictions, decisions, explanations, or future states.

The syllabus meets the learning outcome of communicating how quantitative data, interpretations, and models are connected to outcomes, predictions, and decisions through several key assignments. In the MIDI Sequencing and Grooves assignment, students manipulate MIDI variables such as velocity and timing, reflecting on how these changes impact the groove and predict the overall flow of their track. Similarly, in the Loudness Standards Analysis, students analyze industry statistics on loudness and dynamic range, using data to understand and predict audio quality trends in the music industry.

The Sketching Out Your Production with Data-Driven Analysis assignment further strengthens this connection by having students align a reference track in their DAW using quantitative data (tempo, time signature, structure) to guide their own production sketch. They reflect on how this data informs their creative decisions and predicts the flow of their track. Lastly, the Final Project ties it all together, with students using quantitative tools like tempo and gain staging to influence their production, reflecting on how these data-driven choices shape the final outcome and predict future results in music production.

In this assignment, students are tasked with creating an initial sketch of their own music production based on quantitative data derived from a reference track. In Part 1, they choose a reference track and identify key data points such as tempo (the speed of the song, measured in BPM or beats per minute), time signature (the rhythmic structure of the song), and structural landmarks like the verse and chorus. Using their DAW (Digital Audio Workstation), students align the reference track to these data points and set locators (markers in the DAW to guide the structure). They also reflect on how this setup helps them predict the arrangement and flow of their own song. In Part 2, students use the reference track's data as a guide but create an original production sketch, noting how the quantitative aspects (tempo, structure, dynamics) inform their decisions. Finally, in Part 3, they write a reflection on how the data-driven approach influenced their creative choices, considering how different interpretations might lead to alternative outcomes.

The "Sketching Out Your Production with Data-Driven Analysis" assignment aligns well with this learning outcome by requiring students to actively use quantitative data to guide their music production process. In Part 1, students identify key data points from a reference track, such as tempo, time signature, and structural landmarks, which provide a clear model for organizing their production. By aligning their track based on these data points, students are able to make informed predictions about the arrangement and flow of their own song, showing how data-driven decisions directly affect musical outcomes.

In Part 2, students continue to connect quantitative data to creative decisions by using the reference track's framework to build their own production. They reflect on how manipulating variables like tempo or arrangement timing affects the final track's structure, predicting how changes to the data might lead to different outcomes. This process of interpreting data to shape the creative direction demonstrates how students use quantitative models to make decisions and forecast future states in their production, fully aligning with the learning outcome of connecting data, models, and outcomes.

Assignment: Sketching Out Your Production with Data-Driven Analysis

Part 1: Lining up a Reference Track

1. Choose a reference track based on the genre and recordings you’ve selected to analyze.
2. Quantitative Setup: Start by identifying key data points such as tempo (BPM), time signature, and structural landmarks (verse, chorus, etc.).
3. Align the reference track in your DAW, set locators, and adjust tempo and time settings to match the track.

4. Modeling and Predictions: Re-route the reference track's audio output so it doesn't pass through your master channel, and reflect on how using this reference helps predict your arrangement decisions and the overall flow of your sketch.

Part 2: Build Your Sketch

1. Use the reference track as a guide to sketch out the first version of your own song/production. This doesn't have to be an exact copy, but aim to use the same quantitative framework (e.g., tempo, arrangement timing, or sections where new sounds are introduced).
2. Connecting Data to Outcomes: As you build, keep track of how the quantitative data from the reference (tempo, arrangement structure, dynamics) informs your decisions. How do changes or interpretations of these data points affect the final outcome of your track?

Part 3: Reflection

1. In 200 words, explain how the quantitative data from the reference track informed the decisions and predictions you made during your production process.
1.a. Discuss specific points, such as how the tempo guided the pacing of your song or how the structure influenced the arrangement.
1.b. Consider how interpreting the data differently might have led to alternative outcomes in your sketch.

QTRS Learning Outcome 5: Effectively employ one or more digital tools to demonstrate quantitative reasoning, interpretations of calculations, or the creation and evaluation of visualizations.

Nearly every QTRS learning outcome requires the use of digital tools.

For example, in the MIDI Sequencing and Grooves with Data Analysis assignment, students use a DAW (Digital Audio Workstation) to manipulate MIDI variables such as velocity, timing, and note placement. Through this, they learn how data and measurement influence the groove and feel of their compositions. The DAW's MIDI editor allows them to visualize and organize this data, enabling them to classify and assess the quantitative aspects of their drum patterns, which directly connects to understanding and manipulating data using digital tools. The students then evaluate how these changes impact the musical flow, fulfilling the outcome of evaluating data-driven arguments in music production.

The use of digital tools extends to hypothesis formation and modeling, such as in the Compression as a Mathematical Model assignment, where students use compressors in a DAW to explore the mathematical principles behind dynamic processing. By adjusting settings in the software, they form hypotheses about how changes will impact audio dynamics. In the Sketching Out Your Production with Data-Driven Analysis assignment, students further use the DAW to align a reference track's tempo, structure, and dynamics, predicting how these quantitative data points will inform their own production decisions. The digital tools provide an interactive platform for students to test, visualize, and communicate how their interpretations of quantitative data lead to specific outcomes, demonstrating the connection between data models and creative decisions.

Assignment:

MIDI Sequencing and Grooves with Data Analysis

Objective: In your DAW (Digital Audio Workstation), create drum loops for two different sections of a track, focusing on how variables and measurements influence the patterns you create.

1. Drum Loop Creation:
0.a. Create one drum loop for a Verse section and another for a Chorus section (each at least 2 bars).
0.b. Optionally, create a third loop for a Pre-Chorus or Post-Chorus section.
0.c. Each section's drum loop(s) should contrast yet logically flow within the song.
0.d. If needed, recreate drum patterns from a favorite song to help you understand how professional tracks use these elements.
1. Data Analysis and Reflection:
0.a. Variables and Measurement: Identify and manipulate MIDI variables such as note velocity, timing (swing, quantization), and tempo. Reflect on how changes in these variables affect the groove and feel of the drum loops.
0.b. Data Visualization: Use the DAW's MIDI editor to visualize your drum patterns. Take screenshots of the MIDI grid for each section (Verse, Chorus, etc.) and include these in your submission.
0.c. Organization: Compare the differences in MIDI note placement, velocity, and rhythmic density between sections. How do these quantitative aspects (e.g., tempo, note length, subdivisions) create contrast and flow between sections?
1. Submission:
0.a. Include the DAW project file.
0.b. Submit screenshots or exports of the MIDI editor view for each section.
0.c. Write a 200-word reflection on how you manipulated variables and used measurements to organize your data and enhance the song's structure.

List all course-specific learning outcomes. Where appropriate, identify the associated QTRS learning outcome(s) in brackets (see below for example). Note: It is expected that a majority of course-specific learning outcomes will be associated with a QTRS learning outcome.

By the end of this course students will understand the basic tools and techniques of music production. Students will:

1. Understand and control both analog and digital signal flow [QTRS LO2, LO3, LO5]

2. Manage files properly [QTRS LO5]

3. Sequence MIDI [QTRS LO1, LO3, LO5]

4. Use virtual synthesizer and samplers [QTRS LO1, LO3, LO4, LO5]

5. Be able to mic a sound source and record audio via both mic and line input [QTRS LO5]

6. Edit audio and MIDI [QTRS LO1, LO2, LO3, LO4, LO5]

7. Demonstrate basic mixing techniques [QTRS LO2, LO3, LO4, LO5]

8. Collaborate with classmates remotely [QTRS LO5]

9. Be able to autonomously create productions and demos [QTRS LO4, LO5]

Provost Use Only

Backmapped Maroon Approval

No Response

Form Submission - Proposer

Submitted for Approval | Proposer

Anthony Obr - September 16, 2024 at 10:30 PM (America/Phoenix)

Department Approval

Approved

Heather Landes

Karen Schupp - September 17, 2024 at 12:31 PM (America/Phoenix)

syllabus approved at MDT level in Kuali CM on 9/16

GSC Coordinator Review

Sent Back

Alicia Alfonso

April Randall - September 17, 2024 at 2:51 PM (America/Phoenix)

The GS Gold syllabus statement should be the exact text found in this document (https://docs.google.com/document/d/1JrFD2qKryUpvc0wvj4C2N8i0lqoQKY4XRmFOgkNnyF0/edit) and shouldn't include anything about the Maroon designation or the learning outcomes. Please revise and reattach the syllabus file.

Form Submission - Proposer

Submitted for Approval | Proposer

Anthony Obr - September 18, 2024 at 10:23 AM (America/Phoenix)

Department Approval

Approved

Heather Landes

Karen Schupp - September 18, 2024 at 11:09 AM (America/Phoenix)

GSC Coordinator Review

Approved

Alicia Alfonso - September 18, 2024 at 3:14 PM (America/Phoenix)

Unit has corrected GS statements on syllabus.

April Randall

Assistant Vice Provost Review

Approved

Tamiko Azuma - September 18, 2024 at 3:34 PM (America/Phoenix)

All required components confirmed.

Pre-GSC Meeting

Approved

Alicia Alfonso

April Randall - September 18, 2024 at 5:22 PM (America/Phoenix)

Quantitative Reasoning (QTRS) Subcommittee

Acknowledgement Requested

Abhishek Singharoy - September 19, 2024 at 10:43 AM (America/Phoenix)

Jason Nichols

Terri Kurz - September 27, 2024 at 4:31 PM (America/Phoenix)

Revise and Resubmit: The course goal stated is: “Through the act of writing, arranging and producing original material, and using 'in the box' techniques, students will learn the basics of music software, home studio workflows, basic engineering techniques and the fundamentals of mixing.” The course objectives focus on the creative process as well. However, the provided assignments are disconnected from the course goal and objectives. The course will need to be revised to focus on the QTRS learning objectives within the course description and course learning objectives. For example, the assignments in the syllabus are stated as: “Assignments for this course fall into these categories: Analysis: Listening to musical form, comparing and contrasting musical styles These assignments account for 20% of your final grade. Critical Listening and Analysis – 10pts Production Analysis – 10pts.” None of these assignment categories align with the QTRS paperwork. The QTRS assignments provided in the QTRS application are supposed to be part of the actual course and syllabus. Please note that the assignments listed in the QTRS paperwork must be permanent curriculum in the course. It would be very helpful to include the assignments rather than just descriptions of the assignments.

Michelle Mancenido

Elizabeth Kizer

General Studies Council Meeting

Waiting for Approval

Alicia Alfonso

April Randall

Registrar Notification

Notification

Courses Implementation

Implementation

Approval

Rebecca Flores

Lauren Bates

Alisha Von Kampen

Proposer Notification

Notification

Anthony Obr

College Notification

Notification

Stephani Etheridge Woodson

ATCS Notification - ASU Course

Notification

Bryan Tinlin

Jessica Burns

Michele Devine

DARS Notification

Notification

Leticia Mayer

Peggy Boivin

EdPlus Notification

Notification

Sarah Shipp

Bronson Cudgel