THE CHINESE UNIVERSITY OF HONG KONG
Print Course Catalog Details

Academic Org: Dept of Computer Sci & Engg – Subject: AI: Systems & Tech

Course: AIST3110 **Course ID:** 013988 **Eff Date:** 2022-07-01 **Crse Status: Active** **Apprv. Status:** Approved **[**New Course**]**

Music Information Retrieval **音樂資訊檢索**

This course provides a comprehensive study on the analysis, visualisation, processing, and mining of sound and music data. Music processing is an interdisciplinary research area where technology and art meets. The course covers topics on feature extraction and analysis in different time scales, including tempo and beat tracking, chord recognition, and structure analysis. The ultimate goal is on "machine listening", where the computers will have the ability to understand the music to facilitate creation.

本科提供聲音及音樂數據的分析、圖像化、處理及數據挖掘的全面訓練。音樂處理爲一跨學科研究領域，包含科技與藝術的範疇。科目涵蓋不同時間的特徵提取，例如拍子追蹤、和弦識別和結構分析等。最終目標爲「機器聆聽」，使計算機能夠理解音樂以促進創作。

Grade Descriptor:

A

EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有關等級說明的資料，請參閱英文版本。

B

GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

有關等級說明的資料，請參閱英文版本。

C

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

有關等級說明的資料，請參閱英文版本。

Equivalent Offering:
Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)
Grading Basis: Graded
Repeat for Credit: N
Multiple Enroll: N
Course Attributes:

Topics:

COURSE OUTCOMES

Learning Outcomes:

At the end of the course of studies, students will be able to:
1. recognize sound and musical features in programming;
2. use machine learning tools to manipulate music dataset;
3. generate music with musical features.

Course Syllabus:

Week 1: Music Representations
Week 2: Fourier Analysis
Week 3: Music Synchronization and Alignment
Week 4: Music Structure Analysis and Audio Fingerprinting
Week 5: Tonal Analysis
Week 6: Chord Recognition

Week 7: Tempo and Beat Tracking
Week 8: Musical Genre, Similarity, and Mood
Week 9: Content-based Audio Retrieval
Week 10: Musically Informed Audio Decomposition
Week 11: Music Generation with ML
Week 12: Student project presentations
Week 13: Student project presentations

Assessment Type:

Examination	: 40%
Lab reports	: 20%
Project	: 40%

Feedback for Evaluation:

1. Quiz and examinations
2. Course evaluation and questionnaire
3. Question-and-answer sessions during class
4. Student consultation during office hours or online

Required Readings:

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Recommended Readings:

1. M. Müller, Fundamentals of music processing. Cham: Springer, 2015.
2. A. Lerch, An Introduction to Audio Content Analysis: Applications in Signal Processing and Music Informatics. John Wiley & Sons, Inc, 2012.

OFFERINGS

1. AIST3110 — Acad Organization=CSD; Acad Career=UG

COMPONENTS

LAB : Size=30; Final Exam=N; Contact=1
LEC : Size=30; Final Exam=Y; Contact=3

ENROLMENT REQUIREMENTS

1. AIST3110

Enrollment Requirement Group:
Pre-requisite/Co-requisite: AIST2010 or CSCI3280

New Enrollment Requirement(s):

Pre-requisite = AIST2010 or CSCI3280
Co-requisite = AIST2010 or CSCI3280

CAF

eLearning hrs for blended cls	0
No. of micro-modules	0
Research components (UG)	1% - 49%

< E N D O F R E P O R T >