Computer and Information Science
CISC 7610X: Multimedia Databases
Fall, 2017
(2 hours, 3 credits)

Description Multimedia database design issues. Indexing and retrieval of text documents, audio files, images and video. Multimedia data types and formats. Techniques and data structures for efficient multimedia similarity search. System support for distributed multimedia databases. Measurement of multimedia information retrieval effectiveness. Products, applications, and new developments.

Instructor: Prof. Michael Mandel

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> **Web** http://mr-pc.org
> **Office hours** Tuesday 5–8 pm and by appointment

Course meetings Tuesday 8:15–10:20 pm, Ingersoll 3214

Prerequisites Computer and Information Science 7510X or a course in database systems.

Main textbook

- G Harrison. Next Generation Databases : NoSQLand Big Data. Apress L P. 2015. ISBN: 9781484213308.

Additional textbooks

- C Manning, P Raghavan, H Schütze. An introduction to information retrieval. Cambridge University Press, 2009. Online: http://nlp.stanford.edu/IR-book/pdf/irbookonlinereading.pdf
- S Rüger. Multimedia Information Retrieval: Synthesis Lectures on Information Concepts, Retrieval, and Services. Morgan & Claypool, 2009.

Grading The course will be graded on a curve, with the final grade computed by weighting assignments as follows:

Participation / attendance	10%
Homeworks (x2)	10%
Midterm	25%
Project proposal	10%
Project presentation	10%
Project paper	25%

All homeworks and projects should be turned in via blackboard at least 30 minutes prior to the beginning of the corresponding class period. Homeworks turned in late will be penalized 10% for each day they are late. An assignment that is turned in two days late and would have received a 90% will instead receive an 70%.

Attending class is mandatory and attendance will be taken at the beginning of every meeting. This rule does not apply to absences due to religious observances, as described on page 72 of the Undergraduate Bulletin.

Online Resources Slides, assignments, and readings will be posted on the course website:

> http://mr-pc.org/t/cisc7610/

The course will also have a blackboard site with a dropbox for each assignment, grades, and announcements.

Course Topics

1. Introduction to multimedia databases, Examples, Issues related to multimedia data types
2. Review database approaches: Relational databases, especially SQL, Object-oriented databases
3. Multimedia data and data formats, Perception, Compression, Metadata querying, creation, extraction
4. User interface issues
5. Approaches to multimedia databases: Extended relational, Object-oriented, Object relational, Object databases, NoSQL, NewSQL
6. Multimedia database architectures and performance issues, Storage and disk scheduling issues
7. Distributed multimedia databases, Quality of service
8. Principles of content-based retrieval: Indexing methods, Evaluation
9. Text document retrieval: tasks, processing, similarity metrics
10. Image retrieval: content-based retrieval, tagging, captioning
11. Speech and music retrieval: content-based retrieval, tagging, captioning
12. Video retrieval: content-based retrieval, tagging, captioning
13. Multimedia database applications

Key Dates   There will be one midterm exam in class on October 17, 2017, final project presentations will be on December 12, 2017, and the final project writeup is due on December 19, 2017. Please see the course website for a list of all assignment due dates.

University policy on Academic Integrity   The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for policy implementation can be found at http://www.brooklyn.cuny.edu/bc/policies. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member MUST report the violation.

Course policy on Academic Integrity   While you are encouraged to discuss the course material and assignments with your classmates and anyone else you might like, all submitted assignments must be *strictly your own work*. If you include any work from other sources, including web pages, stack overflow, publications, books, or conversations, it should be explicitly cited with proper credit given to the original author and a link to it if it is online.

Center for Student Disability Services   In order to receive disability-related academic accommodations, students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to setup an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at (718) 951-5538. If you have already registered with the Center for Student Disability Services, please provide your professor with the course accommodation form and discuss your specific accommodations with him.

Email correspondence   I will regularly use e-mail to send out announcements, changes in the syllabus, reminders about tests or due dates, etc. It is your responsibility to check e-mail regularly to keep up-to-date with these announcements. I will use the e-mail address you have listed with the College. Therefore, please make sure that this is indeed the correct address.

Please include the course number (CISC 7610) in the subject line of any email you send to me. I have a filter setup that flags any such email as important and I am sure to see it quickly. If you don't, it might take me longer to respond. Please make sure that your full name is clearly visible, either in your email address, in the subject, or in the signature.