

# GLIS 633-F2016: MULTIMEDIA SYSTEMS

Tentative course outline – 25 August, 2016 (online)

## Disclaimer

This syllabus is provided for informational use only. Content and assignments may change before the start of the course and may differ between course sections. Students enrolled in this course are to retrieve the official version from the McGill course management site.

## General information

Elective course – Fall 2016; Tuesdays 2:35-5:25

Rooms 433 (lectures) and 328 (labs) of the Education Building, 3700 McTavish.

Instructor: Prof. Frissen,

Room 210; E: [ilja.frissen@mcgill.ca](mailto:ilja.frissen@mcgill.ca); T: 514 398 4684

Please always use your McGill address to communicate with me via e-mail.

Office hours by appointment.

This course was originally conceived and developed by Prof. Guastavino.

## Prerequisite

GLIS 617 Information System Design

## Short description

This is an introductory course in digital media with an emphasis on digitizing analog media. It is intended for students from all backgrounds who are interested in learning the foundational scientific concepts and the basic techniques of digital media production and manipulation and their relevance in the modern library and archive. This knowledge will help you in making educated guesses, rather than relying on defaults or recipes, in using tools and techniques in application programs. The practical component of the course is organized around learning about how to digitize (archival) audio, image, and video materials, and using various software packages for manipulating digital sound, digital images, and digital video.

## Learning outcomes

At the end of the course you will be able to

- Prepare and perform digitization tasks commonly performed in library and archival settings
- Modify digital sound, image, and video files
- Outline the fundamental principles of digitization
- State the limitations of human perception and how it affects the digitization practice
- Interpret core standards of data compression
- Distinguish various forms of data compression

## Course content

- Overview of multimedia systems and applications
- Principles of digitization: sampling, quantization, Nyquist theorem
- Digitization practice in audiovisual archive and (academic) library
- Digital audio: sounds, speech and music, audio effects, MIDI
- Digital imaging: resolution, file formats, color representation, raster vs vector formats
- Analog and digital video
- Basic sound, image and video editing
- Data compression techniques

## GLIS 633-F2016: MULTIMEDIA SYSTEMS

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### Instructional methods

In this course there are lectures, lab sessions, tours, guest lectures, an expert panel, and individual assignments. Lectures will concentrate on the general principles of digitization, while labs and assignments focus on the practical issues and skills using hardware and software tools. The tours will provide a behind the scenes look at the daily operation of a McGill archive and library

### Schedule

Week		Topic/Activity	Read.	Lab	Due
1	Sep 6	Intro			
2	Sep 13	<b>Visit AV Archives McGill</b>	Bam10: <b>chpt 2</b>		
3	Sep 20	Sound and Hearing	Won: <b>4</b>	Audacity	
4	Sep 27	Digital Audio	Won: <b>5</b>	GarageBand	a0
5	Oct 4	Digital Images	Won: <b>2 &amp; 3</b>	GIMP	a1
<b>Study break</b>					
6	Oct 18	<b>Visit HSSL</b>	Bre14; Min14		i0
7	Oct 25	Selected topics: Guidelines Raster Image Master Files	FAD10		a2
8	Nov 1	Analog and digital video	Won: <b>6.1-7</b>	iMovie	i1
9	Nov 8	Digital video (cont'd) & Principles of compression	Won: <b>6.8-10</b>		v0
10	Nov 15	<b>Guest lecture Prof. Guastavino</b> Digital compression & Standards	Bam10; Ros13		i2
11	Nov 22	<b>Guest lecture George Massenburg</b>	TBD		v1
12	Nov 29	<b>Final Quiz</b>			

### Textbooks and readings

The course is based on the following (non-required) textbook:

[Won16] Yue-Ling Wong (2016). Digital media primer: Digital audio, video, imaging, and multimedia programming. Boston: Pearson. (**QA76.575 W665 2016**)

This book has been put on a 3 hr. reserve loan at the *HSSL self-serve reserve room* (**ask at the service desk!**). If there are issues with availability, contact me.

## GLIS 633-F2016: MULTIMEDIA SYSTEMS

Tentative course outline – 25 August, 2016 (online)

In addition to the textbook there are a number of readings:

- [Bam10] Bamberger, R., & Brylawski, S. (2010). *The state of recorded sound preservation in the United States: a national legacy at risk in the digital age*. Washington, D.C.: Council on Library and Information Resources.
- [Bre14] Breeding, M. (2014). Ongoing Challenges in Digitization. *Computers in Libraries*, 34(9), 16-18.
- [FAD10] Federal Agencies Digitization Initiative (2010). Technical Guidelines for Digitizing Cultural Heritage Materials: Creation of Raster Image Master Files.
- [Min14] Mindel, D., & Russell, K. (2014). Building digital collections on a budget. *Computers in Libraries*, 34(9), 4-6, 8-10.
- [Ros13] Rosenblum, A.L., Burr, G., & Guastavino, C. (2013). Survey: Adoption of published standards in cylinder and 78rpm disc digitization. *IASA Journal*, 41, 40-55.

### Facilities

*Software.* In the lab sessions, we will use the iLife suite (for iMovie), GIMP, and Audacity. GIMP and Audacity are open-source cross-platform image and audio manipulation software, respectively. For convenience you may want to download and install them on your computer:

Audacity: <http://audacity.sourceforge.net/download/>

GIMP: <http://www.gimp.org/downloads/>

You may also want to download and check out Inkscape, a vector graphics editor for Windows, Mac OS X and Linux: <https://inkscape.org/en/download/>

*Computer labs.* The Mac lab (EDU328) has been reserved for the lab sessions; it has 35 workstations. The rest of the time, computers are available on a first-come first-served basis. Technicians are available for help. Consult the faculty of Education's page for an overview of the available resources: <http://www.mcgill.ca/education/technology>

	<b>Rm. 328 – Larger lab</b>
Monday - Thursday	08:15 am – 8:45 pm
Friday	08:15 am – 4:45 pm
Weekends and holidays	Closed

Hours of operation of the Education Mac lab

*File management.* **It is your responsibility to manage your files.** Always transfer the data onto the computer to work locally, and then transfer it back onto an external storage unit (e.g. a flash drive) when you are done. Always properly eject (or, unmount) the external drive before you disconnect it. Make sure to back-up your data (images, sounds, video footage).

*Hardware.* In case audiovisual equipment is needed, loans are available from inside the Education Computer Lab (Rm 328). Please consult the “Technology in the Faculty” page for more information at: <http://www.mcgill.ca/education/technology>. Additional audiovisual equipment loans are available at 688 Sherbrooke West, Room 285. Reservations can be made online. For more information consult the McGill Knowledge Base at <http://kb.mcgill.ca> and search for item 1744 (Audiovisual Equipment Loans).

## GLIS 633-F2016: MULTIMEDIA SYSTEMS

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### Evaluation

In the table below is an overview of the different assignments, lab sessions, the quiz, and their weight for the final grade. Details for the assignments can change, and will be made available at the appropriate time.

	Activity	Description	Deliverable	Weight		
<b>Audio</b>	a0	<b>Lab:</b> Audacity	Introduction to the basics of Audacity	Products of assigned exercises	2.5%	25%
	a0	<b>Lab:</b> GarageBand	Introduction to the basics of GarageBand	Products of assigned exercises	2.5%	
	a1	Sample frequency and file size	Systematically change the sampling frequency (44.1k, 22k, 11k, 8k, 4k) and bit depth	Report on effects of the manipulations + Recommendations/lessons learned for practice	5%	
	a2	Digitizing a long playing record (LP)	Digitize a vinyl record + post processing + metadata	Report describing transfer process + Recommendations/ lessons learned for practice	15%	
<b>Images</b>	i0	<b>Lab:</b> GIMP 2.0	Introduction to the basics of GIMP	Products of assigned exercises	2.5%	22.5%
	i1	Scanning and OCR	Run OCR on scans 1) made with HP Scanjet 8200 2) made with Spirit Walk-Up book scanner 3) provided by HSSL Digital Initiatives	Report on comparison of OCR quality + Recommendations/lessons learned for practice	5%	
	i2	Scanning images and color balancing	Scan of color picture while systematically changing the ppi parameter + application of basic color management techniques	Report on the effects of the manipulations + Recommendations/lessons learned for practice	15%	
<b>Video</b>	v0	<b>Lab:</b> iMovie	Introduction to the basics of iMovie	Products of assigned exercises	2.5%	17.5%
	v1	Digitizing a VHS tape	Digitize an excerpt from a VHS tape (10 min) + video editing (e.g., trimming, adding title) + metadata + upload to designated YouTube channel	Recommendations/lessons learned for practice	15%	
<b>Quiz</b>	Quiz will cover all the topics discussed in the lectures and the assignments (but not the panel)				35%	

### Policy notes

*"McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/) for more information)". See <http://www.mcgill.ca/deanofstudents/plagiarism> for more information.*

*"In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded."*