

MM 125 - Foundations of Digital Media

T-TR 12:00 - 1:20, LH230/LH235, 3 Credits

Office Hours MW 1-3

Instructor: Kevin Roy

email: kevin.roy@eou.edu

<http://www.kevinroy.com/courses>

Catalog Description:

Introduces the process of digitizing media such as images, audio, and video, and the use of software tools used to manipulate digital media.

Learning Outcomes:

After completing this course, students should be able to:

- describe the general process of sampling and quantizing analog media to create a digital representation;
- describe the specific process of digitizing images, audio, and video;
- explain the purpose of dithering in the digitizing process;
- use representative digital imaging software to capture and manipulate digital images;
- use representative digital audio software to capture and manipulate audio; and
- demonstrate workflows for creating digital media.

Means of Assessment:

Two exams, and a final exam will be used to assess students' understanding of concepts introduced in the class. Studio assignments will be used to assess students skills. Assessments will be administered through [Blackboard](#). Students are required to be in class when taking exams.

Course Objectives:

This class supplies students in the Multimedia Studies concentration in Computer Science/Multimedia Studies and students in the Digital Media concentration in Media Arts with fundamental knowledge of the composition of digital media and the tools used to work with digital media.

Brief Outline of Course (subject to change):

Week 1

Course Overview
Analog information vs. digital data
Converting Analog to Digital
Bits and bytes

Readings

[Chapter 1. Background](#)

Interactive Supplements and Worksheets

Converting Analog to Digital - Sampling and Quantizing

Week 2

Base-10 vs. Base-2
File Size Calculation
File Compression basics, CODECS

Readings

[Chapter 2. Fundamentals of Digital Imaging](#)

Interactive Supplements and Worksheets

Base-10 vs. Base-2 Notation

Decimal to Binary Guided Practice

Week 3

Sampling and quantizing in digitizing images
Pixels and image resolution
Image bit depth
How pixels, image resolution, and bit depth are related to sampling and quantizing
Color representation in digital images
Bit-mapped images vs. vector graphics.

Readings

[Chapter 3. Capturing and Editing Digital Images](#)

Interactive Supplement and Worksheets

Sampling and Quantizing in Digital Images
RGB Color Cube
Color Picker Demo
RGB to HSV
Color Value Appraisal

Week 4

Working with scanners and scanning
Digital photography
Histograms
Color Curves
Common tools in digital image editing programs—selection, layer, color and tonal adjustment, fine-tuning specific parts, sharpening
Working with vector graphics programs
Image PPI vs. Printer DPI
Printing
Images for Web

Reading

[Chapter 3. Capturing and Editing Digital Images](#)

Interactive Supplement and Worksheets

Understanding and Applying Histograms
Understanding and Applying Curves for Color Adjustments
Optical Color Mixing in Pointillism, Dithering, and Inkjet Printing
Making Sense out of Megapixel
Choosing Amongst JPEG, GIF, and PNG

Week 5

Sound waves
Frequency and Pitch
Digitizing Sound - Sampling and Quantizing
Nyquist's theorem
Dynamic Range
Audio file size optimization
MIDI

Readings

[Chapter 4. Fundamentals of Digital Audio](#)

Interactive Supplement and Worksheets

Sound as a Pressure Wave
Digital Audio Fundamentals
Digital Audio: Sampling, Quantizing, and Dynamic Range

Week 6

Methods of Acquiring Digital Audio
Techniques of Digital Audio Alteration and Touch-up
Delivery of Digital Audio

Readings

[Chapter 5. Capturing and Editing Digital Audio](#)

Week 7

interlaced and progressive scan
overscan and safe zones
frame rate
frame size and frame aspect ratio
pixel aspect ratio
counting frames with timecode
data rate
video compression methods
MPEG
GOP, I-frame, P-frame, and B-frame
standard definition DV and high definition DV
streaming video and progressive download

Readings

[Chapter 6. Fundamentals of Digital Video](#)

Interactive Supplement and Worksheets

Fast-action digital video showing the interlace artifact
Demo showing upper and lower fields
Video recording: interlaced vs. progressive
Video display: interlaced vs. progressive
Pixel aspect ratio
Understanding timecode

Week 8

Capturing and digitizing video
Common workspace and workflow in digital video editing programs
Tools and techniques in digital video editing
Common workspace and workflow in DVD authoring programs

Readings

[Chapter 7. Digital Video - Production and Post-Production](#)

Interactive Supplement and Worksheets

(view films)

Week 9

frame-by-frame, tweened, and scripted animation
programming fundamentals
mouse and keyboard event handlers in multimedia authoring
controlling objects' appearance and behaviors with scripts

Readings

[Chapter 8. Interactive Multimedia Authoring](#)

Grading Policies:

All grades are posted in and calculated in [Blackboard](#).

Final Exam (cumulative) - 30% of final grade
2 Exams - 20% each of final grade
Studio Assignments - 20% of final grade
Quizzes - 10% of final grade

Three absences and your grade will be dropped a letter grade. Five will justify lowering two grades.

Text or Suggested Materials:

The required text for this course is available free on the Internet!

[The Digital Media Primer](#)

Statement on Academic Misconduct:

Eastern Oregon University places a high value upon the integrity of its student scholars. Any student found guilty of an act of academic misconduct (including, but not limited to, cheating, plagiarism, or theft of an examination or supplies) may be subject to having his or her grade reduced in the course in question, being placed on probation or suspended from the University, or being expelled from the University—or a combination of these. (Please see Student Handbook Campus Citizenship (Academic), Campus Citizenship (Behavior) online at <http://www.eou.edu/saffairs/handbook/honest.html>)

Statement on Americans with Disabilities:

If you have a documented disability or suspect that you have a learning problem and need accommodations, please contact the Disability Services Program in Loso Hall 234. Telephone: 962-3081.

Syllabus Prepared By:

Kevin Roy

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