Fall 2015

# FTA 6565

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*University of New Orleans*

# Course Outline and Syllabus for FTA 6565
# Professor: Mark Raymond
# Office Hours: By Appointment Only

**Student Learning Objectives for FTA 6565**
Graduate students will be able to comprehend how audio and video images are captured and stored in a digital device and how binary coding functions as a language in communication. The student will be able to identify and interpret the differences between analog and digital devices and formats. The student will be able to operate systems and software used in the postproduction process and will be able to demonstrate its use in creating, editing, and enhancing digital audio and video. The student will be able to apply these skills as required to create finished video projects with graphics and sound effects.

**Grading Criteria/Standard**
Students will be evaluated based on assignments, lab tutorials, midterm exam, and final exam. The following weight will be given to each component
Assignments and Tutorials – 20%
Midterm Exam – 40%
Final Exam – 40%
Make-ups will only be given for excused absences. Late work will not be accepted for a grade; however, all assignments must be turned in for successful completion of the course. Failure to turn in all assignments will result in a grade of "I" until all work for the course is completed and turned in.
100-90 A
89-80 B
79-70 C
69-60 D
60-below F

ATTENDANCE
This class will be taught in a highly interactive manner. Practical tests of your ability to use the software will constitute a large part of the midterm and final exams. Your attendance at every class session is especially important. It is unlikely that you will be able to pass the practical portion of this class if you miss more than 1 class. Missing 3 classes will result in a reduction of final grade by one letter.

ASSIGNMENTS
For the purpose of this course an "Assignment" is any written or practical work assigned to be completed and turned in. Assignments in this class are given for your benefit. Failure to complete assignments on time will cause you to fall behind on tutorials and other cumulative work. As such, no late assignments will be accepted without written excuse. An assignment is late if it is not turned in at the beginning of the class for which it is due.

QUALITY OF WORK
The quality of work is a determining factor of your level of professionalism. Therefore, all assignment will be graded on content and presentation. Practical assignments will be graded based on rubric information provided, all written assignments must be typed and submitted in either Word or PDF form.

ACADEMIC INTEGRITY
Academic integrity is fundamental to the process of learning and evaluating academic performance.
Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the UNO Judicial Code for further information.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES
Students who qualify for services will receive the academic modifications to which they are legally entitled. It is the responsibility of the student to register with the Office of Disability Services each semester and to follow their procedures for obtaining assistance.

## Lecture Topics:

- Binary Code
  - How it functions as a language.
  - Binary Code, Bits, Bytes, and Words (the structure of digital data)
  - Understanding the base 2 number system.
  - How binary is used to represent information.
  - How word length effects amount of information

- Sampling (saving pieces of reality)
  - What is sampling
  - Steps
  - Transduction
  - Measurement
  - Quantization
  - Binary Encoding
  - What parts of reality can be sampled.
  - Space
  - Temperature
  - Sound Energy
  - Light Energy
  - Pressure
  - When is sampling practical?
  - Form of energy/matter/space
  - Measuring tool
  - Resolution Needed
  - Transduction to original form of energy/matter

- Using Digits to Represent Sound
  - Sound as Pressure Waves
  - Frequency and Volume
  - Transducing sound
  - Sound as Electricity (sine wave)
  - Measuring the sine wave
  - Sampling the sine wave
  - PCM Encoding
  - The Nyquest Theorem and frequency
  - Quantizing
  - Word Length and Dynamic Range
  - File Formats (.wav, .aif, .mp3, .mov…)

- Using Digits to Represent Images
  - Light Components
  - Transducing Light
  - Pixels
  - Measuring
  - Sampling
  - Quantizing
  - Word Length and Color Resolution
  - Spatial Resolution

- Digital Video
  - Spatial Resolution
  - Temporal Resolution
  - Sub-Sampling
  - Compression
  - File Formats
  - CODECs

- Compression
  - Interframe and Intraframe
  - Lossless and Lossy
  - Pros and Cons
  - Uses for Compression
  - Hardware and Software

- Digital Video Devices
  - From Film to Tape
  - Recording Media Formats (SD/HD/4K/8K)
  - RAW vs Encoded recording
  - Hard Disc Recorders and Storage Area Networks (SANs)
  - DVD & Blu-ray Disc Creation

## Course Schedule

### Week-1 - 8/20

Binary Code

### Week-2 – 8/25 & 8/27

Scratch Software
Transcoding
Binary Code

Sampling

### Week-3 – 9/1 & 9/3

Sampling
Sampling Practical Exercise

### Week-4 – 9/8 & 9/10

Using Digits to Represent Sound

### Week-5 – 9/15 & 9/17

Using Digits to Represent Sound
Practical Application of Digital Audio Exercise

### Week-6 – 9/22 & 9/124

Using Digits to Represent Sound
Practical Application of Digital Audio Exercise
Mid Term Review

### Week-7 - 9/29 & 10/1

Mid Term Review

### Week-9 - 10/6 & 10/8

### Mid-Term

Using Digits to Represent Images

### Week-10 – 10/13 & 10/15

Using Digits to Represent Images

### Week-11 – 10/20 & 10/22

Using Digits to Represent Images
Digital Video

## Week-12 – 10/27 & 10/29

Compression

## Week-13 – 11/3 & 11/5

Compression

## Week-14 – 11/10 & 11/12

Compression Practical Exercise Assignment

## Week-15 – 11/17 & 11/19

Digital Video Devices

## Week-16 – 11/24

Digital Video Devices

## Week-17 – 12/1 & 12/4

Digital Video Devices
Final Exam Review

## Final Exam Week 12/7 – 12/11

## Bibliography

Adobe Systems, Inc. Adobe Photoshop CS5 Users Guide. San Jose: Adobe Systems, Inc., 2007.

Avid Technology, Inc. Avid Media Composer Pro User's Guide. Tewksbury: Avid Technology, Inc., 2009.

Avid Technology, Inc. Introduction to Avid Media Composer. Tewksbury: Avid Technology, Inc., 2009.

Avid Technology, Inc. Avid Media Composer Effects Guide. Tewksbury: Avid Technology, Inc., 2010.

Brinkman, Ron. The Art and Science of Digital Compositing. San Diego: Academic Press, 1999.

Bruse, Claudius. Audio in Computers. Cologne: Wizoo, 1999.

Carlson, Ludvig, Nordmark, Anders, and Wiklander, Roger. Nuendo Operation Manual. Hamburg: Steinberg Media Technologies GmbH, 2003.

Holman, Tomlinson. Sound for Film and Video Second Edition. Woburn: Focal Press, 2002.

Hubris-Cherrier, Mick. Voice and Vision A Creative Approach to Narrative Film and DV Production. Focal Press 2007