DATE: Spring 2009

COURSE NUMBER AND TITLE: MUSI 4803 – Streaming Media: Start to Finish

CREDITS & HOURS: 3 credit hours: lecture 2 hours; lab 3 hours
      Lecture: Monday & Wednesday from 2:05-2:55 pm in Couch 102
      Lab: Monday & Wednesday from 7:05-8:25 pm in Couch 102 (additional or alternate times may be arranged)

PROCEDURES: Class will meet twice weekly from 2:05-2:55 pm for lecture. Attendance for lectures is not required or factored into your grade. However, the instructor is under no obligation to make up material presented in class unless the student can provide a reasonable and, if appropriate, documented excuse. Some assignments and projects may require additional lab time, which is scheduled from 8:05-9:30 pm on Monday and Wednesday evenings. Additional or alternate lab times may be arranged with the instructor.

RECOMMENDED PREREQUISITE: MUSI 3450 - Survey of Music Technology; MUSI 3500 - Introduction to Computer Music; MUSI 4450- Integrating Music into Multimedia

INSTRUCTOR: Dr. Frank Clark, Couch Building, Room 111 Office Hours: MWF 11 :00 AM, T 10:00 AM, or by appointment; Telephone: 404.894.8964; E-mail: fclark@music.gatech.edu

PURPOSE: To familiarize students with tools and techniques for the creation, production, and distribution of audio, video, and live events for Internet and Internet2 dissemination. Particularly emphasized are:

1. Basic principles of steaming media
2. Configuration and use of streaming software and hardware including integrated systems
3. Metafile creation and implementation
4. SMIL (Synchronized Multimedia Integration Language) basics
5. Streaming media encoders for the Internet
6. Compare and contrast the advantages of QuickTime, RealServer, and Windows Media Server
7. Preparing audio and/or video for delivery or consumption over the Internet
8. Creation, modification and conversion of audio file formats for Internet delivery - wav, mp3, wmv, mpg, qt, mov, rm, aif, au, sd, etc.
9. Basic lighting, audio, and video techniques for streaming media
10. Voice and audio recording and editing techniques for maximum streaming quality
11. Video recording and editing techniques for maximum streaming quality
12. DVTS, VideoLAN VLC Media Player, and equivalent implementations
13. Flash video and audio resources
14. Copyright issues
15. Aesthetic analysis of audio and video
16. Application of design, color-theory, and aural analysis to fixed and live media types/broadcasts
17. Streaming media testing tools and techniques including server log analysis
18. Cross-platform issues

REQUIRED TEXTS: none – on-line and instructor-provided resources are utilized in lieu of a hard-copy text

RECOMMENDED TEXTS:

Bartlett, Bruce and Jenny (2002) *Practical Recording Techniques*, Third Edition, Woburn, MA ISBN 0-240-80473-2.

Follansbee, Joe (2006) *Hands-On Guide to Streaming Media: An Introduction to Delivering On-Demand Media*, Second Edition, Elsevier Science & Technology Books, ISBN: 0-2408-0863-0 .

Follansbee, Joe (2006) *Hands-On Guide to Windows Media*, Elsevier Science & Technology Books, ISBN: 0-240-80759-6 .

Huber, David and Runstein, Robert (1995) *Modern Recording Techniques*, Fourth Edition, Sams Publishing, Indianapolis, IN, ISBN 0-672-30639-5.

Kirk, Ross and Hunt, Andy (1999) *Digital Sound Processing for Music and Multimedia*, Focal Press, Wobum, MA, ISBN 0-240-51506-4.

Kozak, Brad and, Dolecki, Eric (2003) *Flash MX Audio Magic*, New Riders Publishing, Indianapolis, IN, ISBN 0-7357-1194-1.

Mack, Steve and, Rayburn, Dan (2006) *Hands-On Guide to Webcasting: Internet Event and AV Production*, Elsevier Science & Technology Books, ISBN: 0-240-80754-5.

Reinhardt, Robert and Dowd, Snow (2002), *Flash MX Bible*, Wiley Publishing, Inc., New York, NY, ISBN 0-7645-3656-7.

Rothstein, J. (1995) *MIDI: A Comprehensive Introduction*, Second Edition, A-R Editions, Madison, ISBN 0-89579-309-1.

Simpson, Ron (1998) *Cutting Edge Web Audio*, Prentice Hall PTR, Upper Saddle River, NJ, ISBN 0-13-080753-2.

Sokol, Mike (1998) *The Acoustic Musician's Guide to Sound Reinforcement and Live Recording*, Prentice-Hall, Inc., Upper Saddle River, NJ, ISBN 0-13433509-0

Stolarz, Damien (2005) *Mastering Internet Video: A Guide to Streaming and On-Demand Video*, Addison Wesley Professional, ISBN: 0-321-12246-1,

Williams, David and Webster, Peter (2005) *Experiencing Music Technology*, Third Edition, Thompson/Schirmer, ISBN 0-534-17672-0

COURSE OBJECTIVES: Each student will be able to:
1. Configure and use a streaming media encoding workstation (Mac and PC)
2. Demonstrate basic theoretical knowledge and practical skills for capturing, editing, and delivering streaming media content (audio and/or video)
3. Understand and define terminology associated with streaming media
4. Rationalize and apply the appropriateness of specific audio tools for streaming applications
5. Record speech and other sounds for streaming media delivery
6. Create, edit, and deliver video for streaming media applications
7. Demonstrate familiarity with video effects appropriate for streaming media
8. Assess streaming media from technical and aesthetic perspectives
9. Assess streaming media delivery systems from a technical perspective

COMPUTER SKILLS USED: Word processing, e-mail, file management, Internet research and file downloading, digital audio and MIDI software usage, audio file format conversion, basic web page authoring, streaming media file creation, streaming media server software.

METHOD OF INSTRUCTION:
1. Lecture
2. Discussion
3. Analytic Charts and Handouts
4. Selected Reference Readings
5. Computer Assisted Instruction
6. Original and/or Group Projects
7. Cooperative Learning

METHOD OF EVALUATION:
The following evaluative tools will be utilized in measuring progress towards obtaining the class objectives:

Assignments	50%
Mid-Term	15%
Quizzes	15%
Final Project	20%
TOTAL	100%

All assignments, quizzes, and tests will be graded by points. The final grade for the course will be determined by dividing the total points earned by the number of points possible for each of the categories listed in Method of Evaluation. These numbers will be converted into a grade according to the following scale: A=100-90%, B=89-80%, C=79-70%, D= 69-60%, F= 59% and below.

GRADING POLICIES:
Homework assignments are due ON THE DUE DATE. A penalty of one letter grade per day will be applied to all late assignments. Documented illnesses and family emergencies are excepted, of course. Quizzes and exams cannot be made up unless you have a valid, documented excuse.

ACADEMIC INTEGRITY: Students must do their own work on assignments, projects, and tests unless collaboration is previously specified and approved by the instructor. Students caught cheating will receive zero credit for that assignment/quiz/test and may be subject to further sanctions through the Office of Student Integrity. Students are expected to abide by the Georgia Tech Honor Code and avoid any instances of academic misconduct, including but not limited to:

1. Possessing, using, or exchanging improperly acquired written or oral information in the preparation of a paper or for an exam.
2. Substitution of material that is wholly or substantially identical to that created or published by another individual or individuals.
3. False claims of performance or work that has been submitted by the student.

Please refer to the published Georgia Institute of Technology Academic Honor Code for further information:
http://www.deanofstudents.gatech.edu/integrity/policies/honor_code.html

STATEMENT REGARDING STUDENTS WITH DISABILITIES:
In accordance with the Americans with Disabilities Act, students with bona fide disabilities will be afforded reasonable accommodation. The ADAPTS Office will certify a disability and advise faculty members of reasonable accommodations. The web site for a student requesting accommodation is:
http://www.adapts.gatech.edu/faculty_guide/sturespon.htm

STATEMENT REGARDING CHANGES IN COURSE REQUIREMENTS:
Since all classes do not progress at the same rate, it may be necessary to modify the above requirements or their timing as circumstances dictate. For example, the number and frequency of exams may be changed, or the number and sequence of assignments will be altered. In either of these cases, adequate notification will be given in writing and be discussed in class.

MAJOR SOFTWARE TITLES:
We will work with a variety of software to create audio for audio and/or video assets, integrate them into projects, and distribute/stream them to our students and others. The software titles below have been selected primarily because of cross-platform accessibility and/or usability. Pending the exact configuration and/or interests of the class, some of the title may only be used on an individual basis.

DVD - Apple iDVD and/or DVD Studio Pro
Streaming Media - RealProducer, QuickTime Pro, Windows Media, RealNetworks Helix
Screen-based Multimedia - Macromedia Director, Microsoft PowerPoint
Digital Video - Apple Final Cut Pro, iMovie
Interactive Video – ArKaos VJ
Time-based Multimedia Authoring: QuickTime Player Pro
Page-based Multimedia Authoring for the Web - Macromedia Dreamweaver, Flash
Acquiring and Creating Digital Audio - Reason, Digital Performer, Peak, Garage Band, Soundtrack
MIDI Creation and Editing Software - Digital Performer, Apple Logic Express
Special Topics - understanding and using CGIs for Web, SMIL Encoder
MP3 – SoundJam, iTunes
MIDI scripting – MAX/MSP
Graphic Notation – Finale, Sibelius

PROPOSED COURSE OUTLINE:
To revised on a weekly or bi-weekly basis.

Monday, January 5	Course overview, distribution of syllabus, software survey, moderately uncomfortable interaction with mildly amusing instructor
Wednesday, January 7	Creation, modification and conversion of audio file formats for Internet delivery - wav, mp3, wmv, mpg, qt, mov, rm, aif, au, sd, etc.
Monday, January 12	OIT Streaming server overview and testing accounts
Wednesday, January 14	Voice and audio recording/editing techniques for maximum streaming quality, distribution of Project 1 – Audio
Monday, January 19	No Class – School Holiday
Wednesday, January 21	Encoding of audio for Project 1
Monday, January 26	Project 1 – Audio due, presentation of projects
Wednesday, January 28	Video recording and editing techniques for maximum streaming quality, distribution of Project 2 – Video
Monday, February 2	Basic lighting, audio, and video techniques for streaming media

Wednesday, February 4	Video encoding
Monday, February 9	Project 2 due, presentation of projects
Wednesday, February 11	Cross-platform issues – video, audio, and graphics, distribution of Flash resources
Monday, February 16	Flash tools and techniques, distribution of Project 3 - Flash
Wednesday, February 18	Flash audio and video, ActionScript
Monday, February 23	Flash audio and video continued, Flash in HTML
Wednesday, February 25	Flash server and configuration (provisional)
Monday, March 2	Project 3 – Flash due, presentation of projects
Wednesday, March 4	Aesthetic analysis of audio and video, distribution of Project 4 – Critical Analysis
Monday, March 9	Aesthetics continued
Wednesday, March 11	Project 4 –Critical Analysis due, presentation of projects
Monday, March 16	No Class – Spring Break
Wednesday, March 18	No Class – Spring Break
Monday, March 23	Begin DVTS, VideoLAN VLC Media Player, and equivalent implementations, distribution of Final Project, distribution of Project 5 – Streaming Broadcast
Wednesday, March 25	DVTS configuration, hardware, camera control, video mixing
Monday, March 30	Audio techniques for voice and music, echo cancellation, Final Project proposals due
Wednesday, April 1	DVTS audio continued, more echo cancellation, audio mixer configuration – compression and limiting
Monday, April 6	Lighting and camera-monitor configurations
Wednesday, April 8	Project 5 – Streaming Broadcast due, presentation of projects
Monday, April 13	Copyright issues and legal considerations
Wednesday, April 15	Streaming media testing tools and techniques including server log analysis
Monday, April 20	Preliminary review of Final Projects and problem identification
Wednesday, April 22	Last minute crises, concerns, and meltdowns
Thursday, April 30	11:30-2:20 Final Exam Period – presentation of Final Projects