

## WRITTEN REPORT ASSIGNMENT

Each student enrolled in the course will be required to write a concise written report dealing with some topic related to acoustics and/or audio (several example topics are given below). The paper should represent an introductory treatment of the chosen topic. Several considerations will guide your choice of topic and format:

- Choose a topic you are interested in, *but* make sure you have sufficient reference material to produce a comprehensive treatment. Look for up-to-date books in the library, check journals and periodicals, use the web, and follow up on other sources of information. Your paper should include a bibliography of at least four *pertinent* and *authoritative* references, not just uncorroborated web site URLs.
- The paper should be written in formal style, but at a level appropriate for reading by another student in this class who is not necessarily familiar with the topic. Imagine that you are writing a background report at work for reading by your project team or for your technical manager.
- Organize your paper according to the following outline:
  - Paper must be prepared with a word processor and printed using a high-quality printer.
  - Overall length expectation: 5-10 pages.
  - Please use 1" margins on all edges of the paper.
  - All pages should be numbered consecutively.
  - A **cover sheet** with:
    - your name
    - the title of your paper
    - the course number, course title, and semester
  - An **introduction** providing an overview of the topic and the paper.
  - Two or more **sections** containing the report and significance of the findings.
  - A **conclusion and summary** section including suggestions for other info sources.
  - A complete **bibliography** organized by author, including all reference info.
  - If needed, include an **appendix** of reference data, e.g., component data sheets.
- DUE DATES:
  - Wednesday, 11/8/06: A **one page summary** of paper topic (I will read and comment)
  - Monday, 12/4/06: Final copy of paper **turned in** (due at the start of class that day)

## TOPIC IDEAS:

These are some *possible* paper topics: note that you do *not* need to choose from this list!

Testing of Loudspeakers  
Acoustical simulation using Matlab  
Manufacture of Compact Discs and DVDs  
Methods for Artificial Reverberation  
Musical Acoustics of String Instruments  
Musical Acoustics of Percussion Instruments  
Design of Audio Power Amplifiers  
Design of Fixed/Variable Analog Filters Using Op Amps  
Circuit Design, Component Selection and Layout for Audio Purposes  
History of Electronic and Computer Music  
The Roles of Futurism, Dadaism, and Fascism in the Development of Electroacoustic Music  
MIDI: the **M**usical **I**nstrument **D**igital **I**nterface Standard  
Contemporary DSP Chips for Audio Signal Processing  
Digital Filter Basics  
Operation Principles for a Specific Microphone Type  
MP3: What it is and how it works  
Auditorium Acoustics and Measurements  
Listening Room and Studio Design  
Digital Sampling and Sample Rate Conversion  
Sonic Booms  
Human Perception: Critical Bands and Masking  
Binaural Localization  
Aids for the Hearing Impaired  
Testing Strategies for Psychoacoustic Experiments  
Speech Production and Perception  
Automatic Speech/Speaker Recognition  
Noise Reduction Techniques for Analog Tape (Dolby™, dbx™, etc.)  
The Telephone System  
Active/Adaptive Noise Control  
Analog/Digital/Analog Conversion  
Noise Shaping for ADC and DAC  
Digital Oversampling Theory and Practice  
Measurement of Audio Equipment: Frequency Response, THD, etc.  
Storage and Transmission Standards for Audio Signals