Research Paper

Description:
For this assignment you are expected to research and compare specifications of two studio configurations. Please record the results of your research in the form of a short report (max 4pp).

Topic:
A signal chain is only as strong as its weakest link. In a recording studio, this may be any component between the sound source and the recording medium. For the sake of this assignment, we will presume the recording medium a computer hard drive.

While one may invest a substantial portion of a studio budget in equipment that can record high bit depth and sampling rates, the microphones and preamps used with this system may not have a frequency response or dynamic range to make the high-resolution equipment worth the price.

For each application of a recording studio different types of microphones will be needed, and different numbers of channels will be required. For example recording a chamber orchestra will require different microphones than recording an electric rock ensemble. Recording a jazz band playing together with microphones used for each instrument requires more input channels than recording a pop song tracked one instrument at a time.

• Design a studio configuration for one of these two applications:
  o Simultaneous multitrack recording
  o Sequential multitrack recording

• Consider your microphone selection based on recording
  o Drums and amplified instruments
  o Unamplified instruments

To make a scientific comparison, use published specifications and measurements rather than opinion and hearsay. Please cite all sources of images, facts, measurements and any other information used in your report.
Emphasize the following aspects in your comparison:

- **Microphones:**
  - Directional response
  - Frequency response/sensitivity (and deviation from average response)
  - Maximum SPL without distortion
  - Inherent input noise (EIN)

- **Audio Interface**
  - Number of line level input & output channels
  - Number of microphone input channels
  - Sampling rates & Bit depths
  - Signal to noise ratio
  - Frequency response/sensitivity of inputs
  - CPU Connectivity: USB, Firewire, other

- **Mixer/Preamps**
  - Number of line level input & output channels
  - Number of microphone input channels
  - Sampling rates & Bit depths
  - Signal to noise ratio
  - Frequency response/sensitivity of inputs
  - Digitally controlled or entirely analog

**Questions and Analysis:**
In the discussion of your report please address the following:

- Which specifications (other than price) are most pertinent to your application?
- Which studio equipment would you chose if price were no object?
- If price were an issue, what would you be sacrificing in terms of specifications?
- If you had access to the equipment, what would you test to inform your decision?

**Bibliography:**
Author (last, first name) *Title of book or Article*, publisher, publication date.
Author (last, first name) [www.manufacturer-webpage.com/subsection](www.manufacturer-webpage.com/subsection) accessed on: date

Sorry Wikipedia, blogs and other anonymous contributor wiki-pages are not acceptable sources for this assignment.

Manufacturer web pages, articles in AES, IEEE and other publications from peer-reviewed organizations are acceptable. (scholar.google.com almost exclusively searches sources that meet these criteria)