

BREADTHS TOPICS

For the mechanical system redesign of the Montgomery College New Science Center other areas of design will be explored. When redesigning any mechanical systems, the effects and changes made to the mechanical system on the other building systems should always be considered. Achieving the optimal mechanical system means achieving optimal conditions for every aspect of the building including, thermal comfort, energy efficiency, acoustics, lighting, electrical systems, construction costs and schedules, aesthetics, and structural systems. Two of these additional areas of focus are chosen for an in-depth analysis on how they will be affected and altered to improve the mechanical system redesign.

LIGHTING

The Montgomery College New Science Center is an internal load based building. Therefore, decreasing the internal load of the building is one of the major focus areas when trying to achieve optimal energy efficiency while maintaining desired task lighting levels. Both the building lighting schedules and lighting fixture efficiency will be investigated and potentially altered to decrease the internal loads and in-turn decreasing the energy required to light the building and energy needed to maintain desired room temperatures.

ACOUSTICS

Improving the acoustics of the building will create a better learning and working environment for the building occupants. The potential removal of the rooftop equipment will directly influence the mechanical sound transmission and building acoustics. Removing the rooftop equipment will reduce the sound attributed to the building decreasing the noise criteria. The noise reduction and space acoustics will be evaluated based on the changes made to the mechanical systems and space materials.

The acoustical simulations and analysis will be conducted by Microsoft Excel, and EASE, Enhanced Acoustic Simulator for Engineers. This program provides the capability to model the spaces and calculate the reverberation time which will then be compared to the desired levels based on the occupancy type.