A LABORATORY FOR SUSTAINABLE BUILDING DESIGN AT THE SCHOOL OF ARCHITECTURE UNAM

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Nowadays it is indisputable that the professionals in building design have to know the physics principles of the process concerning the saving energy and human comfort in architectural spaces. In México, traditionally, the schools of Architecture are focus on aesthetic and functional spaces, without regard of energy costs and a real physical and psychological comfort.

The School of Architecture at UNAM has developed a project to instrument a laboratory to teach basic principles of Physics to students of Architecture and it is open to graduate students to do research. The instrumentation of the laboratory will allow the students to know and measure the thermal, optical and mechanical properties of materials, as well as, the thermodynamic and fluid dynamics process.

In the industrialized countries, in an attempt to optimize the quality indoors in terms of comfort and temperature particularly, there has been a rising trend towards the use of mechanical devices with undesirable energy implications and high carbon dioxide emissions. Heating, ventilation and air-conditioning systems provide a high indoor air quality and thermal comfort, although they are the largest energy consumers in constructions. Because the climate, it is possible in México provide comfort and user needs in passive way, solving the cooling needs by employing the outside environment providing of natural ventilation of an enclosure. The inside thermal comfort along the day during the year, can be achieved choosing the adequate building orientation and construction materials.

The purpose of the laboratory is provide the architect with tools in order to know the solar radiation in site and select the appropriate materials in
building design. The student will learn how to apply the processes of fluid mechanics as an important strategy in order to give advantage to passive instead of mechanical methods for the cooling needs.