

## The Art of Making Experiments Realized at LUMS

The Physics Lab at LUMS's School of Science and Engineering (SSE) reaches another milestone with the completion of basic mechanical workshop facility. In its share of the realization of the dream that Physics Lab aspires to materialize, the workshop facility fulfils the prime responsibility of manufacturing low-cost and innovative hardware solutions for academic – both teaching and research – endeavors. Without doubt, this marks a new era in the field of indigenous and self-reliant mode of research and development, an aspect most Pakistani Universities have lately ignored.



*Lathe Machine (left) and Milling-and-Drilling Machine (right)*

The mechanical workshop at SSE Physics Lab, led by Assistant Professor of Physics Dr. Sabieh Anwar, is equipped with a CNC turning centre, PCB manufacturing machine, lathe machine, milling and drilling machine and several small-scale equipment needed to carry out oft-arising manufacturing requirements. As a result, a variety of parts can be manufactured in the laboratory using locally available materials and resources. Mechanical parts for several research projects have been manufactured, including cartridge heaters, copper ovens, multilayered X-ray fluorescence shielding boxes, optics stands and adjustable holders, solenoids of variable sizes, plexi-glass casings, high temperature dielectric cells and machined parts of several teaching lab experiments. Experiments on magnetic pendulum, Heat transfer and Hall-effect are fine examples of the potential of the facility.

The workshop has contributed to the development of almost two dozen experiments on physics and engineering, classroom demonstrations. Students are encouraged to complete their projects with a component of equipment building. The philosophy that is engendered is that science can be properly done if the mind and the hand both work together!



*Bearing fixture assembly (left), Dielectric heater copper base (middle) and the XRF Shielding box (right)*

The facility is managed and run by a devoted team of engineers and technicians who are working full-time to run the workshop at its required capacity. While it reduces the cost to far lesser than importing or buying the equipment, it also encourages the local human resource to be involved in the process of indigenous practice of development—and of course a *doctrine of self-sufficiency*.

To further widen the scope of the facility, Physics Lab also offers its services to other departments in SSE and also encourages the students and staff from other disciplines to participate in internships and trainings offered by Physics Lab. This facility, in due course, can be made available to other Universities at cost.

More details regarding the facilities and manufactured equipment at Physics Lab Mechanical workshop can be seen at <http://physlab.lums.edu.pk/index.php/Workshop>