

**Details of Hands-on Sessions on offer at Innovation hub, PGSC, kapurthala  
(For 5<sup>th</sup> to 12<sup>th</sup> class students)**

Name of activity	Eligible Class	Venue	Max intake
<b>Robotics</b>			
<b>1. Hand generator and Castor Bot:</b> Students will assemble their own robotic car using LEGO kits and power the motors . Using LEGO kits the students can design any model and shape as per their creativity and do their own programming using EV3 brick	5 <sup>th</sup> to 8 <sup>th</sup>	Innovation hub/School premises	30
<b>2. Line follower Robot :</b> Good for students who have attended above session . Using LEGO kits the students will assemble Castor bot and do their own programming using EV3 brick. Using sensors they will make line follower robot and learn basic concepts of maze solving.	9 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>Biotechnology</b>			
<b>3. Food Adulteration:</b> A special workshop on Food adulteration with simple techniques to test adulteration. Around 28 tests on different food items will be conducted without usage of any chemical,	8 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>4. Isolating the stuff of Life:</b> Extraction and Precipitation of DNA from living cells ,centrifugation technique, estimation of DNA building model of double helix.	9 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub	30
<b>5. Peep inside Cells :</b> Microscopic observation of different prokaryotic and eukaryotic cells like bacteria, live paramecium, animal cells etc, identification of cell organelles, staining and identifying bacteria from cell shape, size measurement of cells and organelles using microscope, use of stereomicroscope	5 <sup>th</sup> to 9 <sup>th</sup>	Innovation hub	30
<b>General Science</b>			
<b>6. Make your own Beam Bridge and test:</b> Participants will design their own beam bridge using given material and will test its load bearing capacity as applying external vibrations . This model provides a prototype how the building structures bears the earthquakes. The aim of the session is to acquaint with various type of bridge's structure and other parameter involved.	9 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>7. Science behind miracles:</b> Hands-on-activity session to demonstrate the science behind miracles for understanding of scientific principles.	8 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>8. Tesla Coil:</b> Student will make their own tesla coil using transistor, resistance copper wire etc. Tesla coil is an electrical resonant transformer circuit used to produce high-voltage.	8 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>9. Simple Electric motor:</b> Student will make simple electric motor and will learn about law of electromagnetic induction.	9 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>10. Fun with Mathematics:</b> Basics activities to clear concepts of area, volume calculations will be organized. Students will be given mathematical puzzle to develop problem solving skills.	5 <sup>th</sup> to 8 <sup>th</sup>	Innovation hub/School premises	30
<b>11. Origami:</b> Fun based skill development activity using paper. Students will learn to make Paper bag , Flower, animals etc	5 <sup>th</sup> to 9 <sup>th</sup>	Innovation hub/School premises	30

<b>12. Reaction car:</b> Will make a small car out of waste bottle which runs on the principle of Newton third law.	5 <sup>th</sup> to 8 <sup>th</sup>	Innovation hub/School premises	30
<b>13. Rocketry:</b> A Special Workshop to promote the enthusiasm of the students towards the field of rocketry. A live prototype for Rocket will be designed by the students under this activity. The workshop will demonstrate the basic principle behind the working of rockets.	6 <sup>th</sup> to 10 <sup>th</sup>	Innovation hub/School premises	30
<b>14. Principles of Electronics Circuits:</b> A Workshop specially for the students to clear the concepts of Soldering, circuits designing Measuring Resistance through color coding , Use of Multimeter, LDR, Water Level Indicator. circuit designing etc. will also be covered.	9 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30
<b>Mechanical</b>			
<b>15. 3-D Design &amp; Printing:</b> This workshop covers the designing of 2D and 3D objects, tools for 2D to 3D Transformation using Solid Works software and real time live printing with 3D printer.	8 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub	30
<b>16. Fun with Hydraulics :</b> This workshop will focus on the concepts of hydro power and its applications., Pascal's Law. The students will also learn to develop live working models based on hydraulics.	8 <sup>th</sup> to 12 <sup>th</sup>	Innovation hub/School premises	30