

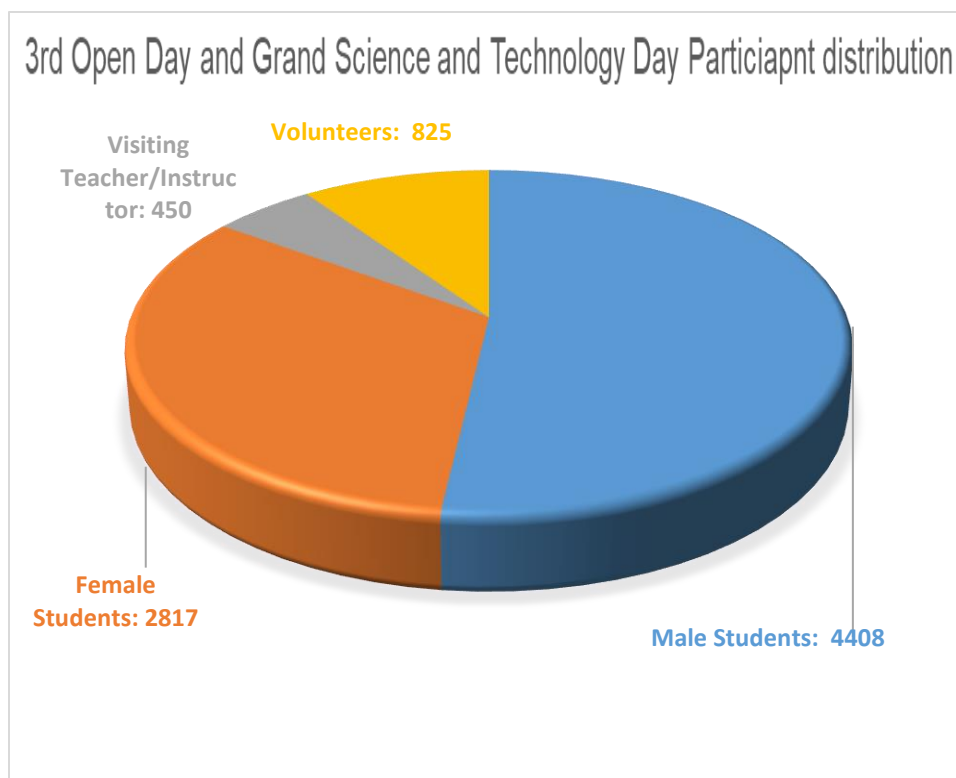
A Brief Report  
on

# Open Day and Grand Science and Technology Exhibition - 2020



**भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर**  
**Indian Institute of Technology Bhubaneswar**

IIT Bhubaneswar organized the 3<sup>rd</sup> edition of Open Day and Grand Science and Technology Exhibition on 12<sup>th</sup> Feb 2020. A total of 8500 students from 167 Schools and colleges from across the different districts of Odisha have participated. The visiting students have interacted with a number of scholars, students and faculty members of IIT Bhubaneswar. On this occasion of Grand Science and Technology Exhibition Institute showcase 252 science and technology related experiments and exhibits (**232+20**) to the visiting students through easy to understand, and interactive sessions. Moreover, the visiting students gain unique experience of science and technology exhibition by voluntarily participating in the live experiment. A detailed of the breakup of the participants is as follows;



Male Students: **4408**

Female Students: **2817**

Visiting Teacher/Instructor: **450**

Volunteers: **825**

Total: **8500**

A total of **167** Schools/ colleges have participated in the Grand Science and Technology Exhibition besides a number of students on individual capacity along with their parents/guardian. The detail break up the schools are as follows;

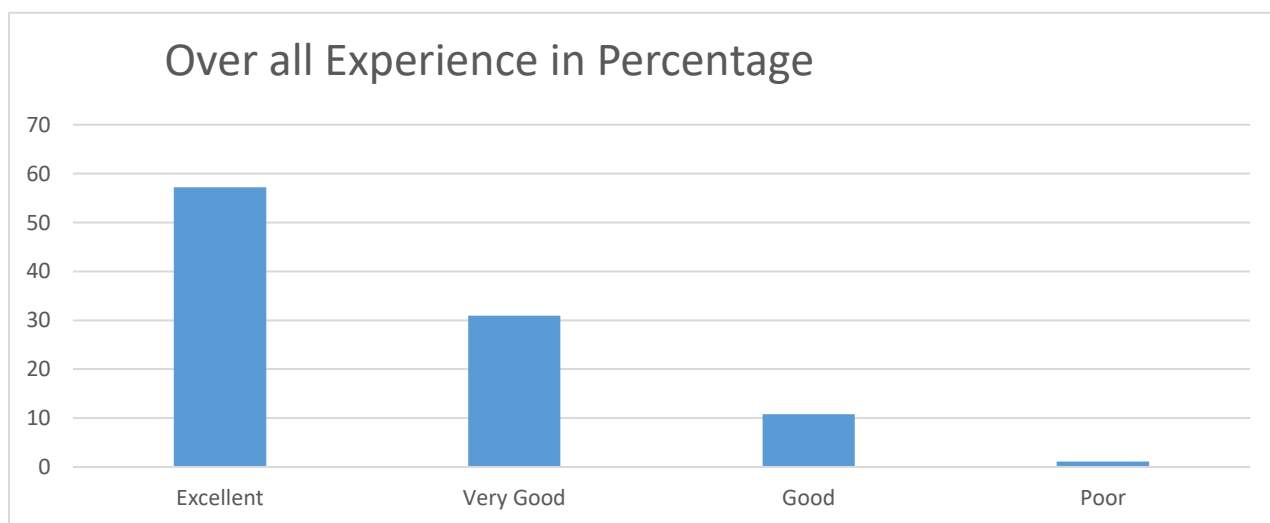
Sl. No	Institute Name
1	ABIT, CUTTACK
2	Aditya Birla Public School, Bhubaneswar
3	ADS Public School, Jatni
4	Allen Career Institute, Bhubaneswar
5	Apeejay School,Bhubaneswar
6	Arugul High School, Khordha
8	Aryan Institute of Technology, Bhubaneswar
9	Asian School of Technology, Khorda
10	B B High School, Badatota
11	Baba Residential College, Jatni
12	Badatota Belapada Govt High School, Khurdha
13	Bariapada college, Bariapada
14	Baripada School, Bariapada
15	Bhartiya Vidya bhavan, Bhubaneswar
16	Bhavan's Center for Communication and Management (BCCM), Bhubaneswar
17	Bhubaneswar Model Public School, BBSR
18	Binayak Acharya Degree College, Berhampur
19	BJB BARUNSEWAR COLLEGE
20	BJB COLLEGE, Bhubaneswar
21	BJB High School, Bhubaneswar
22	BJEM School, Bhubaneswar
23	BOSE, CUTTACK
24	CAET, OUAT
25	Carmel English Medium, JATNI
27	Centurion University, Jatni
28	Christ College, Cuttack
29	College of Agriculture and Engineering, Bhubaneswar
30	College of Basic Science and Humanities, Bhubaneswar
31	College of Natural Law, Bhubaneswar
32	CSRL (Chemistry), Bhubaneswar
33	CUTM University, Jatni
34	DAV Pokariput, Bhubaneswar
35	DAV Public School, Jatni
36	DAV Public School, MCL Talcher
37	DAV Unit-VII, Bhubaneswar
38	DAV UNIT-VIII, Bhubaneswar
39	DM School, Bhubaneswar
40	Doon International School, Bhubaneswar
41	East Coast Railway School, Jatni
42	Einstein Academy of Technology And Management.,Khurda
43	Gandhi Engineering College (GEC), Bhubaneswar
44	Gandhi Institute For Technology, Gangapada, Bhubaneswar
45	Ganesh English Medium School, Baner
46	GIFT,Gangapada, Bhubaneswar

47	Govt High School, Kushamat
48	Govt. Girl's High School
49	Govt. Girl's High School, Balgarh
50	Govt High school, Argul
51	Govt. ITI Berhampur
52	Govt. ITI Bhubaneswar
53	Govt. Polytechnic,Kendrapara
54	IM Degree College
55	Institute of Management and Information Technology(IMIT),Cutack
56	Indira Memorial Degree College, Gajapati
57	Indotech College of Engineering (ICE), Bhubaneswar
58	Nimapara Autonomous College, Nimapara, Puri
59	IOCL
60	ITER, Bhubaneswar
61	Jagannath Bidyapitha, Choudakulat
62	Jatni College, Jatni
63	Jatni Junior College, Jatni
64	Jawahar Navodaya Vidyalaya, Angul
65	Jawahar Navodaya Vidyalaya, Khurda
66	Jawahar Navodaya Vidyalaya,Cuttack
67	JNV Arugul
68	JNV JAJPUR
69	JUPITER DEGREE COLLEGE BBS
70	Jupiter Public School, Gangapada
71	Kalinga Institute of Social Sciences (KISS), Bhubaneswar
72	Kamala Nehru Women's College (Physics), Bhubaneswar
73	K.B.D.A.V College , Nirakarpur, Puri
74	Kendriya Vidyalaya
75	Kendriya Vidyalaya No.1 BBSR
76	Kendriya Vidyalaya No-1, Cuttack
77	Kendriya Vidyalaya No4, Bhubaneswar
78	Kendriya Vidyalaya, Khurda
79	Khudupur Upper Primary School, Khordha
80	KMBB CET Khurda
81	KMBB H.S.S CUTTACK
82	Kusumati Chhanaghara High School, Jatni
83	KV JATNI
84	KV Khordha
85	KV No-1,Cuttack
86	LIC School
87	Lions International School,
88	Loyola Odia School, Bhubaneswar
89	Madhusduan I.T.I, Cuttack
91	Maharatha Vidyapith, Naharakanta
94	Marthapur High School, Dhenkanal
95	Maharishi College of Natural Law, Bhubaneswar
97	MDC SHE, Bhubaneswar

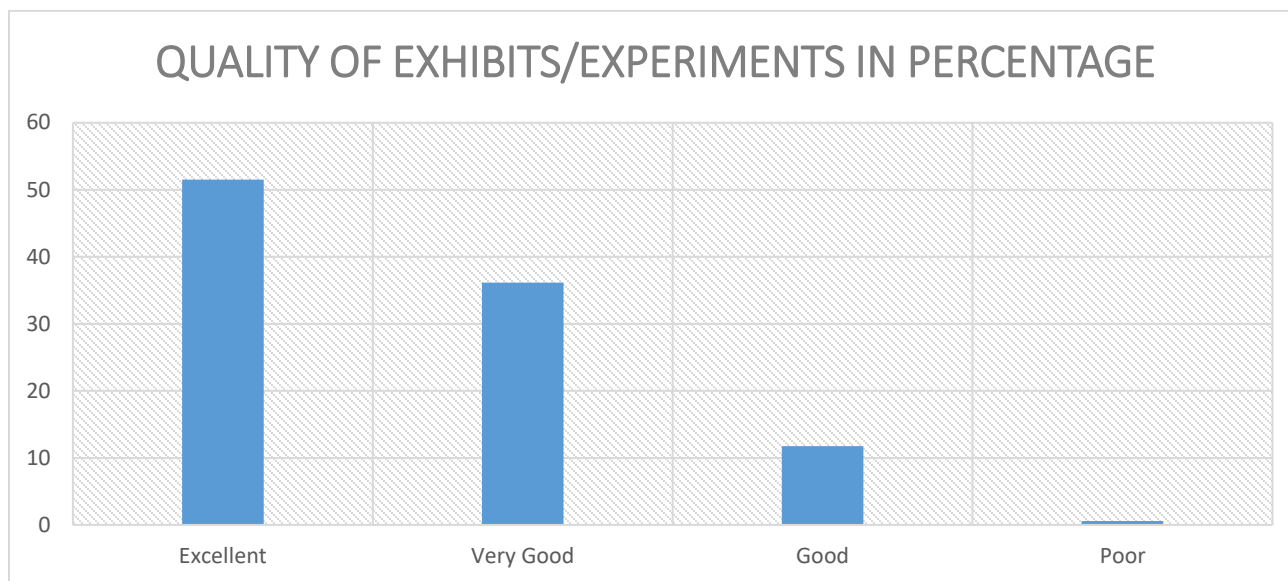
98	MISSION SCHOOL, Jatni
99	Modern English Medium School, Malkangiri
100	Mother's Public School, Bhubaneswar
101	Mount Litera Zee School, Jajpur Road
102	NDRC High School, Jatni
103	Nimapara college, Nimapara, Puri
104	NIIS Institute of information Science and Management, Bhubaneswar
105	Nilachala Polytechnic, Bhubaneswar
106	NISER, Jatni
107	OMC Coaching Centre
108	OMC Super, Bhubaneswar
109	ON College Khordha
110	Oneness International School, Khurda
111	OUAT,BBSR
112	Padanpur Upper Primary School
113	Padanpure Govt.UPS
114	Paktigiria Govt High School, Bhubaneswar
115	PN Automous college, Khordha
116	PN College, Jatni
117	Podapada UGUPS, Jatni
118	Podapada Upper Primary School, Khordha
119	Prananath High School, Jatni
121	Raajdhani Higher Secondary School of Science, Arts & Commerce, Bhubaneswar
122	Railway School, Jatni
123	Rainbow International School, Bhubaneswar
124	Ramadevi Women's University, Bhubaneswar
125	RKHS School
126	Royal College Of Science & Technology, Bhubaneswar
127	RTAPALLI VIDYAPITHA, Khurda
128	Ryan International School
129	S.A.Mahavidyalaya, Balipatna, Bhubaneswar
130	Sharada Shishu Mandir, Alekhapada, Keonjhar,
131	S.S.V.M , DHENKANAL
132	Sai international school, Bhubaneswar
133	Sakti Sai Degree College, Athagarh, Cuttack
134	Sakuntala Devi Govt High School, Jatni Podapada
135	Saraswati Shishu Vidya Mandir
136	Saraswati Shishu Vidya Mandir, JATNI
137	Saraswati Shishu Vidya Mandir,Khordha
138	Saraswati Sishu Mandir, Kantabad, Khordha
139	Saraswati Sishu Mandir, Khorda
140	Saraswati Sishu Vidya Mandir, Jatni
141	Saraswati Sishu Vidya Mandir, Tulasipur, Cuttack
142	Saraswati Sishu Vidyamandir, Dhenkanal
143	Shailabala Women's College, Cuttack
144	Sight Saves(NGO), Bhubaneswar

145	Sigma Public School, Khorda
146	Sigma public school,Khordha
147	SK Nodal High School
148	Skill Development Institute (SDI),Bhubaneswar
149	SOA University
150	SSVM Jatni
151	St. Xavier high School, BBSR
152	St. Xavier High School, Jatni
153	St. Xaviers High School: Senior Secondary, Berhampur
154	ST.Xavier, BBSR
155	Sundaria Upper Primary School, Jajpur
156	Swosti Jyoti School of Basic Science, Jatni
157	Times Scholar's Gurukul, Bhubaneswar
159	Utkal Public School, Jatni, Khordha
160	Utkal University, Bhubaneswar
161	Uttarayanee Girls High school, jatni, Khordha
162	Vedang Institute of Technology, Bhubaneswar
163	Vedang Institute of Technology,Bhubaneswar
164	VIET Rathipur,Khordha
165	Vivekananda siksha kendra,khurda
166	Vivekananda Sikhya Kenra, Bolgarh, Khordha
167	Young Phoenix Public Schools in Samantarapur, Bhubaneshwar

Based on the feedback submitted by the participating students the overall experience at IIT Bhubaneswar on the Grand Science and Technology Exhibitions on 12<sup>th</sup> Feb 2020 is as follows;



Similarly based on the feedback on the Experiments and Exhibits following is the report;



The list of the experiments/Exhibits as demonstrated by different schools is listed below;

### **Open Day 2020 – List of Experiments**

**School of Electrical Sciences**

**List of Experiments**

**Total Number of Experiments: 54**

Sl. No	Laboratory Name	Experiment list
<u>1</u>	ET Lab – LBC 001	<ol style="list-style-type: none"> <li>1. Brightness Control of Electric Lamp</li> <li>2. Do we really require Starter and Choke/Ballast for Fluorescent Tube?</li> <li>3. Can we light the Fluorescent Tube at low voltage?</li> <li>4. Is the Electric Power Product of Voltage and Current?</li> </ol>

		<ol style="list-style-type: none"> <li>5. Load Current Sharing among Different Generators in an Electrical Network.</li> <li>6. Motor speed control Below &amp; Above its Nominal Speed</li> </ol>
<b><u>2</u></b>	<b>Machines Lab – SES 002</b>	<ol style="list-style-type: none"> <li>1. Electric power transfer Without Wire connection-The Concept of transformer</li> <li>2. Employing Group of Transformers to supply load, and their power sharing</li> <li>3. (a) Electricity Generation in Hydro/Thermal Power Station (b) What happens with the Generator, if load changes?</li> <li>4. Principle of rotation of an Industry Motor and its Direction Reversal</li> <li>5. AC to DC Electronic Power Converter</li> <li>6. DC to DC Electronic Power converter</li> </ol>
<b><u>3</u></b>	<b>Renewable Energy System Lab – SES - 010</b>	<ol style="list-style-type: none"> <li>1. Electricity Generation from Hydrogen</li> <li>2. Salt Water Conductivity</li> <li>3. High Voltage Spin Wheel</li> <li>4. High Voltage Pendulum</li> </ol>
<b><u>4</u></b>	<b>AEC/DEC Lab Room No: 104</b>	<ol style="list-style-type: none"> <li>1. Real Time Data Monitoring</li> <li>2. Learning from Puzzles</li> <li>3. Effect of Aliasing in Sampling</li> <li>4. Encoding and Decoding using Cards</li> </ol>



		<ol style="list-style-type: none"> <li>5. Drowsiness Detection System (An alarm system to detect if the driver of a car is falling asleep)</li> <li>6. Home Automation System</li> <li>7. Audio Equalizer</li> <li>8. NOT Gate Inverter</li> <li>9. Mobile Controlled Analog System</li> <li>10. Face Detection based Home Automation</li> </ol>
<u>5</u>	<b>Communication Lab Room No: 109</b>	<ol style="list-style-type: none"> <li>1. Radio Trans-Reception</li> <li>2. Signal Conditioning using Filter (Kit and MATLAB)</li> <li>3. Optical Fiber Fault Identification using OTDR</li> <li>4. Optical Video Microscope</li> <li>5. Analog Signal Transmission using Fiber</li> <li>6. Single Sideband Radio (MANPACK RADIO)</li> <li>7. Transmission of Light through Fiber</li> <li>8. Wagon Wheel</li> <li>9. Cellular Jammer for 2G/4G Mobile Handsets</li> </ol>
<u>6</u>	<b>RTES LAB / Bio Medical Lab Room No: 110</b>	<ol style="list-style-type: none"> <li>1. Pulse Rate Measurement using Photo plethysmography (PPG) Signal on Arduino due Platform</li> </ol>
<u>7</u>	<b>IVP Lab Room No: 213</b>	<ol style="list-style-type: none"> <li>1. Making Videos Fast and Slow</li> <li>2. Blurring and Sharpening of Video using Filters</li> <li>3. Edge Detection Frames Present in a Video</li> </ol>

<b><u>8</u></b>	<b>COA Lab Room No-204</b>	<ol style="list-style-type: none"> <li>1. PlutoAR: An Augmented Reality Platform for Kids Education</li> <li>2. How to Interact with Computers using Gestures?</li> <li>3. Opening the Brain of a Computer</li> <li>4. How file transfer works over a network?</li> <li>5. How Chat Server Works with Encrypted Communication?</li> <li>6. Autonomous Vehicle</li> <li>7. Human detection in videos</li> <li>8. Face detection with low pass and blur</li> </ol>
<b><u>9</u></b>	<b>Room No 014</b>	Robotics Experiments : 07 Numbers

### School of Basic Sciences

#### List of Experiments

**Total Number of Experiments: 44**

Sl. No	Laboratory Name	Experiment list
<b><u>1</u></b>	<b>Mathematics Section</b>	<ol style="list-style-type: none"> <li>1. Patterns in Numbers and relations among them, Prime numbers.</li> <li>2. Tower of Hanoi</li> <li>3. 7 bridge problem</li> <li>4. Magic of Vedic Math</li> <li>5. Day of any Date</li> <li>6. Use of permutation and combination to find out number of rectangles in an m×n rectangular grid</li> <li>7. 27 Card tricks</li> </ol>

		8. Multiplication calculator Napier bones. 9. Maths Video 10. Josephus Problem 11. Mathematics Career Tree 12. Creative Elimination for fun
<u><b>2</b></u>	<b>Physics Lab</b>	1. The 4th state of matter 2. The atom smasher 3. Principle of gravity wave detection with light 4. Play light and sound 5. Diffraction of light and quantum mechanics 6. Light: a particle or wave? 7. Swinging couple 8. Fun with a hard material which is also liquid. 9. Capture rainbow in lab 10. Why does diamond shine 11. Eureka! 12. How does a motor rotate? 13. Water level indicator 14. Ultrasonic radar 15. The illusion of rotating wheel 16. Gravitational waves (POSTER) 17. Gaganayan (POSTER) 18. Quantum computer (POSTER)
<u><b>3</b></u>	<b>Chemistry Lab (Biosciences)</b>	1. Say Hi to DNA

		<ol style="list-style-type: none"> <li>2. Blow, Blow, Blow Away!!!(Know your lung volume)</li> <li>3. Smoking is not fun</li> <li>4. Acid, Acid, Go Away!(Neutralization of stomach acidity with antacid)</li> <li>5. Dare To Dart it is a fun quiz game which will be having questions (biology &amp; chemistry) for all age group of students</li> </ol>
<u>4</u>	<b>Chemistry Lab(Chemistry)</b>	<ol style="list-style-type: none"> <li>1. Magic with Logic ( Fire without matchstick</li> <li>2. Magic: Turn copper to silver to gold</li> <li>3. Magic with Liquid Nitrogen</li> <li>4. Chemical Rainbow</li> <li>5. Solution changing colors</li> <li>6. Blue Bottle Experiment</li> <li>7. Colourful Forest</li> <li>8. Fluorescent water monster</li> <li>9. Oscillating colour clock</li> </ol>

### **School of Earth, Ocean and Climate Sciences**

**Total Number of Experiments: 18**

#### **List of Experiments**

Sl. No	Laboratory Name	Experiment list
1	SBS 003 & 004	<ol style="list-style-type: none"> <li>1. Fossils: Our last 540 Million years</li> <li>2. Rise of the Himalayas</li> <li>3. The water cycle</li> <li>4. Tropical Cyclone</li> <li>5. Rock and Mineral Exhibit</li> <li>6. Volcano Exhibit</li> <li>7. Shining Metallic Minerals and coal deposits</li> <li>8. Fluids in Rocks</li> <li>9. Mantle dynamics in a tank!</li> <li>10. Oscillations in the Atmosphere</li> <li>11. Understanding Ocean Circulations</li> <li>12. Urban Climate</li> <li>13. Satellite and Remote Sensing</li> <li>14. Table-top earthquakes and seismometry</li> <li>15. Atmospheric Convection</li> <li>16. Geomagnetism</li> <li>17. Evolution of Indian Meteorological Satellites</li> <li>18. Quantifying past earthquakes using Paleoseismology</li> </ol>

**School of Humanities, Social Sciences & Management**

**Total Number of Experiments: 12**

**List of Experiments**

Sl. No	Laboratory Name	Experiment list
1	Workshop on English Language Learning Activities	<ol style="list-style-type: none"> <li>1. Vocabulary games</li> <li>2. Story Reading/ Story Telling</li> <li>3. Riddles</li> <li>4. Tongue Twisters</li> <li>5. Grammar</li> <li>6. Spelling Quiz</li> <li>7. Pronunciation</li> </ol>
2	Workshop	<ol style="list-style-type: none"> <li>1. Visual Display</li> <li>2. Cue Cards</li> <li>3. Quiz test</li> <li>4. Story telling/Games</li> <li>5. using PPT</li> </ol>

**School of Infrastructure**

**Total Number of Experiments: 36**

**List of Experiments**

Sl. No	Laboratory Name	Experiment list
1	Geotech	<ol style="list-style-type: none"> <li>1. Demo on geotextile</li> <li>2. Centrifuge</li> <li>3. Laser displacement sensor</li> <li>4. Triaxial setup</li> <li>5. Geomaterials</li> </ol>
2	Surveying	<ol style="list-style-type: none"> <li>1. Total Station</li> <li>2. Auto Level</li> </ol>
3	Environmental Engineering	<ol style="list-style-type: none"> <li>1. Treatment of Wastewater and Generation of Electricity using Microbial Fuel cell</li> <li>2. Treatment of Wastewater by Macrophyte assisted vermifilter</li> <li>3. Microscopic Analysis of microbes present in water and wastewater</li> <li>4. Measurement of noise and CO2</li> <li>5. Solar Photocatalytic Reactor for treatment of wastewater</li> </ol>
4	Structures	<ol style="list-style-type: none"> <li>1. Wind Tunnel Test: Energy extraction from bluff bodies</li> <li>2. Deflection of Beam</li> <li>3. Buckling Instability of Model Columns</li> <li>4. Exhibition of Large Scale Building frame testing setup</li> <li>5. Measuring Shear Force and Bending Moment in Beams</li> </ol>

		<ol style="list-style-type: none"> <li>6. Suspension Bridge Model</li> <li>7. Demonstration of Materials (Light of concrete, Lightweight Aggregate etc.</li> <li>8. Rebound hammer test</li> <li>9. UPV</li> <li>10. Resistivity test</li> <li>11. Various Truss Models</li> </ol>
<b>5</b>	<b>WRE</b>	<ol style="list-style-type: none"> <li>1. Measuring Flow Velocity Distribution using Acoustic Doppler Velocimeter (ADV)</li> <li>2. Flow Visualization in a Pipe using Reynolds Apparatus</li> <li>3. Formation of Free and Forced Vortex Motions</li> <li>4. Demonstration of Hydraulic Jump in a Rectangular Open Channel</li> <li>5. Demonstration of Rainfall of varying intensity over a Catchment using Advanced Hydrology System</li> <li>6. Determination of Coefficient of Drag of Bodies of various Shapes</li> <li>7. Flow Visualization around a Sheet Pile using Seepage Apparatus</li> <li>8. Demonstration of Measurement of Soil Moisture using Theta Probe</li> </ol>
<b>6</b>	<b>Transportation Engg</b>	<ol style="list-style-type: none"> <li>1. Light Weight Deflectometer</li> <li>2. British Pendulum (Skid Resistance)</li> </ol>



		3. Wheel Tracker Device 4. Merlin 5. Samples Exhibit
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### School of Minerals, Metallurgical & Materials Engineering

**Total Number of Experiments: 10**

Sl. No	Laboratory Name	Experiment list
<u>1</u>		6. Know your metals 7. Solidification 8. Green energy fuel cell in action 9. Make your Lithium battery 10. Corrosion 11. Shape memory alloy 12. Bimetallic strip 13. Piezoelectric energy harvesting 14. Atoms in action 15. Computer Design of Mineral processing equipment

### School of Mechanical Sciences, IIT Bhubaneswar

**Total Number of Experiments: 58**

**List of Experiments**

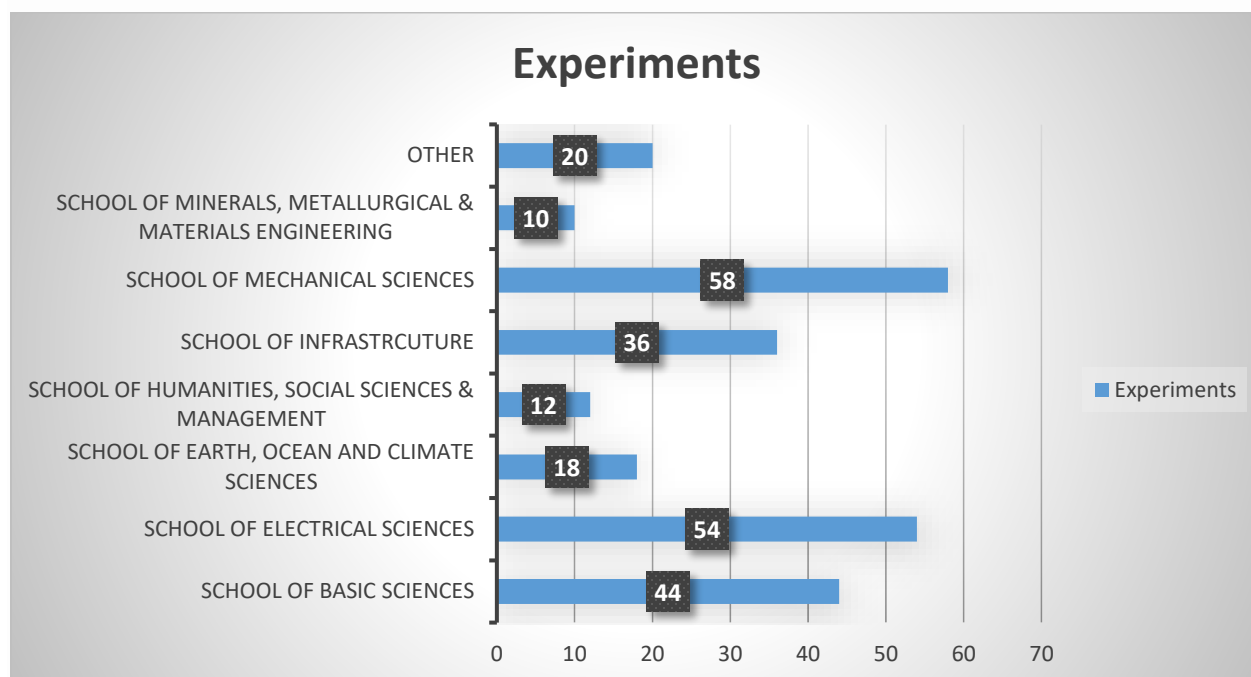
Sl. No	Laboratory	1. Experiment / Demo
1	Workshop	2. Lathe components, turning, facing
		3. Arc welding
		4. Milling operation
		5. Sand Mould Preparation
		6. Shaping operation
		7. Drilling operation
		8. Exhibition of jobs made in the work-shop
2.	<b>Robotics Lab</b>	9. Bioloid
		10. Self-balancing Sea-Saw
		11. Snake robot
		12. Self-balancing robot
		13. CNC milling / lathe machine
3	<b>IC Engine Lab</b>	14. Single cylinder four stroke petrol engine
		15. Single cylinder four stroke diesel engine
		16. Single cylinder two stroke petrol engine
		17. MPFI three cylinder four stroke petrol engine.
		18. Four cylinder four stroke diesel engine.

4	TF Lab	19. High speed camera
		20. Thermal imaging camera + Calibration of thermocouples
		21. Linear heat conduction
		22. Radial heat conduction
		23. Refrigeration
5	FM Lab	24. Series and parallel pumps
		25. Impact of jets
		26. Buoyancy effect
		27. Fluid flow simulations
6	MT Lab	28. Torsion
		29. Hardness
		30. Photo-elastic bench
		31. Buckling
		32. Spring Compression
7	MM Lab	33. Bevel gear, differential gear
		34. Spur gear, reversing gear
		35. Geneva mechanism
		36. Gear box, belt drive

		37. Pantograph, Watt mechanism, Spiral gear
		38. Vibration
8	DIC	39. Teaching Learning Material- 2
		40. AR of 3D model of IIT Bhubaneswar
		41. VR Demonstration
		42. Virtual Tour of IIT Bhubaneswar
		43. 3D printer / Scanner Demonstration
		44. Bike Ambulance
		45. LED Bulb Making
		46. Sagacity The Autonomous car
		47. Smart Devices controlled with Goggle Assistant
		48. Maze Solver
		49. Carbide Robot
		50. Ultrasonic Navigator
		51. Water Droplet Illusion
		52. Sign Language to Audio Converter
		53. Horizontal Direction Drone
		54. The Hologram

		55. Telescope
		56. Infrasound Generator
		57. Project Prajjawala
		58. Robotic Snake

Demos and Other Exhibits: 20



Total number of experiments, exhibits and demos: **252**

**The event was highly appreciated by the Visiting students and the accompanying teachers and instructors.**

Glimpses of

# Open Day and Grand Science and Technology Exhibition – 2020





























