

BHUMIKA OJHA

Pre-final Year Undergraduate, Civil Engineering

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ACADEMIC DETAILS

Year	Degree/Certificate	Institute	Performance
2016-2020	B.Tech	Indian Institute of Technology, Kanpur	7.9*
2016	Grade 12th (CBSE)	Ganesha Blessed Public School, Shivpuri	89%
2014	Grade 10th (CBSE)	Ganesha Blessed Public School, Shivpuri	10/10

*at the end of 5th semester

SCHOLASTIC ACHIEVEMENTS

- Shortlisted for SURGE research fellowship along with 120 others from all over India
- Secured **All India Rank-5895** in JEE Advanced 2016 out of the top 0.2 million applicants selected from JEE Mains
- Among the top **0.2%** in JEE Mains 2016 out of 1.47 million applicants throughout the country
- Awarded by D. C. Educational and Social Welfare Trust for excellence in academics in the year 2013-14

RESEARCH EXPERIENCE

- **Estimation and Partitioning of Evapotranspiration** *Aug'18-Present*
Mentor: Prof. Shivam Tripathi, Department of Civil Engineering, IIT Kanpur
 - Review of various methods and models used for measurement and partitioning of evapotranspiration from journals and research papers
 - To calculate the potential evapotranspiration and scale it down to evaporation, transpiration and interception. Also using Bowen Ratio Energy Balance Method (BREB) for estimation of actual evapotranspiration.
 - Analyzing the effect of different time averaging and advection on the accuracy of BREB method
 - Using the eddy co-variance tower data and Lysimeter data for assessment of the results
- **Modelling of Tidal Circulation and Sediment Transport in the Gulf of Cambay** *May-July'18*
Mentor: Prof. Saumyen Guha, Department of Civil Engineering, IIT Kanpur
 - Theoretical study of circulation pattern and sediment transportation in rivers and estuaries from various research papers and journals
 - Estimated the velocity profiles and dispersion coefficient for the gulf
 - Use the concepts of **computational fluid dynamics** to simulate sediment flow and transport
 - **Results:**
 - For near shore flow, dispersion need to be considered in both longitudinal and transverse directions
 - Fisher's formulation gave partially accurate value of Dispersion Coefficient

OTHER PROJECTS

- **Survey and Geology** *Aug-Nov'18*
Mentor: Prof Salil Goel and Prof Balaji Devaraju, Dept. of Civil Engineering, IIT Kanpur
 - Created a Topographic Map of uneven terrain & permanent features of the academic area in IIT Kanpur using ArcGIS software
 - Learned handling of tools like Trimble Total Station, Nikon Auto level, Trimble R-Series GNSS
 - Created a Navigational Map of with surveying done by handheld Trimble JUNO GPS Receivers and mapped using ArcGIS software
- **Bridge Design and Construction** *June-July'18*
DesCon Hobby Group, Under Science and Technology Council, IIT Kanpur
 - Tutored a group of 5 first year students about structural analysis and designing

- Designed and simulated building frames and bridges using SAP2000
- Designed, simulated and constructed a bridge of 2m span and tested it on shake table

- **Fabrication of Mechanical Object Lifter**

Jan-April'18

Mentor: Prof. Vivek Verma, Department of Material Science and Engineering, IIT Kanpur

- Designed a working model of a mechanical object lifter using **AutoCAD fusion**
- Fabricated the product using manufacturing processes like welding, brazing, casting and rolling

- **Fabrication of Paper recycling machine**

Aug-Nov'17

Mentor: Prof. J. R. Kumar, Department of Mechanical Engineering, IIT Kanpur

- Designed (using **AutoCAD**) and fabricated a manually operated paper recycling machine
- It worked on **bevel and worm gear systems** and had low cost of development and maintenance
- Learned and used manufacturing techniques like milling, drilling and turning

- **Fabrication of RC Aircrafts**

May-July'17

Aeromodelling Club, Science and Technology Council, IIT Kanpur

- Theoretical study on aviation, aerodynamics and the electrical equipment used in an aircraft
- Designed, developed and fabricated 4 RC aircrafts with different wing configurations
- Performed maneuvers for assessment of aircraft's performance

RELEVANT COURSES

Departmental Courses

- Engineering Hydrology
- Engineering Hydraulics
- Geoinformatics
- Sustainable Built Environment
- Environmental Quality and Pollution
- Design of Steel Structures
- Soil Mechanics

- Hydraulic and Hydrologic Design*
- Computer methods in Hydraulics & Hydrology*
- Foundation Design*
- Fluid Mechanics
- Structural Analysis
- Mechanics of solids

Mathematics and Algorithms

- Introduction to Computing
- Linear algebra
- Computational methods in Engineering

- Probability and Statistics
- Partial and Ordinary Differential Equations

* Ongoing Courses

TECHNICAL SKILLS

Programming Tools: C, C++, Python, JavaScript

Civil Engineering Tools: SAP-2000, ANSYS, ArcGIS, HEC-GeoRAS, EPANET, SWAT

Mathematical Tools: MATLAB, MS Excel

Civil Engineering Equipment: Lysimeter, Sap Flow Meter, Venturimeter, Orifice meter, Total Station, Theodolite, Auto level, GNSS Receivers, Juno hand held GPS Receivers

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

- An active member of **PRAYAS** which is a social initiative for the education of underprivileged kids
- Elected by an electorate of 600 residents as the Mess secretary of the Hostel from Aug'17-June'18
- Academic mentor of basic physics course wherein I helped academically weak students
- Secretary of Fine Arts Club, under Media and cultural Council for the academic year 2016-17
- Senior Executive, Techkriti'18(an annual technical festival of IIT Kanpur)