BHUMIKA OJHA

Pre-final Year Undergraduate, Civil Engineering | Contact: bhumikao@iitk.ac.in | +(91)-7318020334

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

- **SURGE 2018**   *May-July'18*
  Modelling of Tidal Circulation and Sediment Transport in the Gulf of Cambay
  Mentor: Prof. Saumyen Guha, Department of Civil Engineering, IIT Kanpur
  Objective: To formulate a model of flow patterns of sediments in the gulf
  Approach:
  - 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

- **Estimation and Partitioning of Evapotranspiration**   *August'18-Present*
  Mentor: Prof. Shivam Tripathi, Department of Civil Engineering, IIT Kanpur
  Objective: To formulate a model for partitioning of evapotranspiration in an agricultural field
  Approach :
  - 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 assesment of the results

OTHER PROJECTS

- **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

1. Engineering Hydrology
2. Engineering Hydraulics
3. Computer methods in Hydraulics and Hydrology[#]
4. Hydraulic and Hydrologic Design[#]
5. Environmental Quality and Pollution
6. Fluid Dynamics
7. Sustainable Built Environment
8. Design of Steel Structures
9. Soil Mechanics
10. Mechanics of solids
11. Structural Analysis
12. Geoinformatics

Mathematics and Algorithms

1. Introduction to Computing
2. Probability and Statistics
3. Linear algebra
4. Partial and Ordinary Differential Equations
5. Computational methods in Engineering

#-to be taken in upcoming semester(Jan'19)

TECHNICAL SKILLS

Programming Tools: C, C++, Python, JavaScript
Civil Engineering Tools: SAP-2000
Mathematical Tools: MATLAB, MS EXCEL
Civil Engineering Equipment: Lysimeter, Sap flow meter, Rainfall runoff simulator, Venturimeter, Orificemeter, Total Station, Theodolite, Auto level, GNSS Receivers, Juno hand held GPS Receivers

SOCIAL RESPONSIBILITY 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)