Bhumika Ojha

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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 5$^{\text{th}}$ 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
  – Reviewed various methods and models used for measurement and partitioning of evapotranspiration
  – Estimated potential evapotranspiration using various methods
  – Analyzed the effect of different time averaging and advection on the accuracy of BREB method
  – Working on Dual source energy balance model (SPARSE, G. Boulet) for estimation and partitioning of Evapotranspiration
  – Working on Priestly Taylor's equation combined with ecophysiological constraints to estimate component energy fluxes in order to partition ET
  – Using eddy co-variance tower data and Lysimeter data for assessment of results

- **Modelling of Tidal Circulation Sediment Transport in Gulf of Cambay**   *May-July'18*
  Mentor: Prof. Saumyen Guha, Department of Civil Engineering, IIT Kanpur   [report]
  – Theoretical study of circulation pattern and sediment transportation in rivers and estuaries
  – Estimated the velocity profiles and dispersion coefficient for the gulf
  – Worked on **computational fluid dynamics** to simulate sediment flow and transport using 2D depth averaged shallow water equations
  – **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
    - Lead a team of 5 freshmen to design and simulate 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 a small scale 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
    - Learned and used manufacturing techniques like CNC maching, milling, drilling and turning

- **Design and Development 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

Hydrology and Hydraulics
- Engineering Hydraulics
- Engineering Hydrology
- Fluid Mechanics
- Computer methods in Hydraulics & Hydrology*
- Hydraulic and Hydrologic Design*

Other Civil Engineering Courses
- Geoinformatics
- Sustainable Built Environment
- Environmental Quality and Pollution
- Design of Steel Structures
- Soil Mechanics
- Foundation Design*
- 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)