

MANISH PANDEY

Mahendranagar, Kanchanpur, Nepal

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OBJECTIVE

Aspiring to secure a challenging role in physics or mathematics that leverages my analytical skills, problem-solving expertise, and dedication to scientific discovery, contributing to innovative advancements in these fields.

EDUCATION

St. Xavier's College, Tribhuvan University

Bachelor of Science in Physics

2022 – Present

Kathmandu, Nepal

- **Physics Courses:** Mechanics, Thermodynamics, Statistical Physics, Electricity and Magnetism (PHY 101); Optics, Modern Physics and Electronics (PHY 201); Mathematical Physics and Classical Mechanics (PHY 301); Space Science (PHY 305); Quantum Mechanics (PHY 401); Nuclear Physics and Solid State Physics (PHY 403).
- **Mathematics Courses:** Calculus (MAT 101); Analytical Geometry and Vector Analysis (MAT 102), Linear Algebra (MAT 201); Differential Equations (MAT 202); Computer Programming (MAT 301); Real Analysis (MAT 302); Numerical Methods (MAT 303).
- **Statistics Courses:** Fundamentals of Statistics (STA 101); Probability and Inference-I (STA 201); Applied Statistics (APS 203).
- **Other Courses:** Scientific Communication (SC 101); Research Methodology (RM 305); Econophysics (PHY 407); Computational Course (COM 408).

Radiant Secondary School

High School (Science Stream)

2019-2021

Mahendranagar, Kanchanpur

PUBLICATIONS

Manish Pandey et. al.

Published: April 2024

Journal: Nepal Journals Online (JSCE)

DOI: 10.3126/jsce.v...

- **Title:** Study of Micro-Discharges in Dielectric Barrier Discharge: Influence of Electrode Structure and Materials

RESEARCH EXPERIENCES

Plasma Physics Research, Khwopa College of Engineering, Bhaktapur

Research Student, Plasma Lab

August 2024 - Present

- Conducting research on plasma generation, focusing on its electrical and optical characterization.
- Engaged in experimental studies to analyze plasma properties and optimize generation techniques.
- Exploring practical applications of plasma technology in various scientific and engineering fields.
- Reviewing relevant literature and collaborating with faculty and peers on ongoing research projects.

SUPPLEMENTARY COURSES

THEORETICAL AND MODERN PHYSICS

Foundations of Quantum Mechanics

| Instructor: Wounjhang Park

Completed: April 2025

University of Colorado Boulder (Coursera)

Explored wave-particle duality, expectation values, Schrödinger and Heisenberg pictures, and multiparticle systems (fermions and bosons).

Particle Physics: An Introduction

| Instructors: Martin Pohl & Anna Sfyrila

Completed: December 2024

University of Geneva (Coursera)

Explored subatomic physics, particle acceleration, detection, and advanced concepts like dark matter and energy.

From the Big Bang to Dark Energy

| Instructor: Hitoshi Murayama

Completed: November 2024

The University of Tokyo (Coursera)

Studied the universe's origins, inflation, dark energy, and the Higgs Boson.

Understanding Einstein: The Special Theory of Relativity

| Instructor: Larry Randles Lagerstrom

Completed: October 2024

Stanford University (Coursera)

Covered Einstein's special relativity, time dilation, spacetime, and relativity paradoxes.

MATHEMATICS AND COMPUTING

Introduction to Mathematical Thinking

| Instructor: Dr. Keith Devlin

Developed creative problem-solving skills for real-world and abstract challenges.

Completed: August 2024
Stanford University (Coursera)

PROGRAMMING AND RESEARCH TOOLS

Introduction to Quantum Computing

| Instructors: Dr. Connie Hsueh & Dr. Derrick Boone Jr.

Completed a 100-hour introductory course covering quantum gates, circuits, algorithms, and hands-on programming simulations using platforms like Google Colab.

Completed: April 2025
The Coding School

Writing in the Sciences

| Instructor: Dr. Kristin Sainani

Enhanced scientific writing skills, focusing on clarity, conciseness, and impactful communication.

Completed: March 2024
Stanford University (Coursera)

Understanding Research Methods

| Instructors: Dr J. Simon Rofo, Dr Yenn Lee & Dr Dan Plesch

Learned essential research methodologies, proposal writing, and critical thinking.

Completed: July 2024
University of London (Coursera)

TECHNICAL SKILLS

- Programming Languages:** Python and R
- Software & Tools:** LaTeX, Matlab, Quantum ESPRESSO, KiCad, Fusion 360, and Figma
- Analytical Skills:** Hypothesis testing, Regression Analysis, Experimental Design, Computational Simulations.
- Communication:** Effective scientific writing, Presentations, Collaborative Research.

COLLOQUIA AND WORKSHOPS

Basics of Quantum ESPRESSO Workshop

St. Xavier’s College, Maitighar

- Attended a focused workshop on the basics of Quantum ESPRESSO, covering electronic structure calculations, DFT, and hands-on simulations for materials modeling.

22 – 24 Apr 2025
Maitighar, Kathmandu

UTOKYO/ICG GNSS Training

Nepal Academy of Science and Technology (NAST)

- Completed a workshop on GNSS data logging, correction techniques, and high-precision positioning.

27 Jan - 01 Feb 2025
Khumaltar, Lalitpur

CubeSat Training

Nepal Academy of Science and Technology (NAST)

- Got hands-on experience with KiCad, Fusion 360, and CubeSat.

16 - 20 Jan 2025
Khumaltar, Lalitpur

Workshop on Space and Atmosphere Physics

St. Xavier’s College

- Learned foundation knowledge, data acquisition, and analysis

1 & 2 Oct 2024
Maitighar, Kathmandu

Workshop on Experimental Plasma Physics

Central Department of Physics, Tribhuwan University

- Gained foundational knowledge in plasma physics, including the development of a low-cost plasma driver and its electrical and optical characterization.

2 - 4 Aug 2024
Kirtipur, Kathmandu

An Introduction to Machine Learning

St. Xavier’s College

- Explored basics of Machine learning

16 - 18 June 2024
Maitighar, Kathmandu

Basic Python Training

St. Xavier’s College

- Covered foundational programming concepts up to the Pandas module.

5 - 26 Mar 2024
Maitighar, Kathmandu

QBronze115: Quantum Computing and Programming Workshop

QWorld, QNepal

- Acquired foundational quantum computing knowledge and programming skills.

25 Sept - 29 Sept 2023
Online

PROJECTS

CubeSat Design and Telemetry System

Jan 2025

| CubeSat Training Workshop, Nepal Academy of Science and Technology (NAST)

- Designed and constructed a model 1U CubeSat to explore satellite systems integration and telemetry data acquisition.
- Simulated structural stability under launch conditions and analyzed system response using 3D modeling and vibration testing.
- Implemented real-time telemetry visualization and system monitoring to study environmental data transmission in near-Earth applications.
- Applied physics principles in system modeling, sensor calibration, and space-environment interaction analysis.

GNSS-Based Traffic Congestion Analysis

Feb 2025

| UTokyo/ICG GNSS Training Workshop, Nepal Academy of Science and Technology (NAST)

- Analyzed real-time GNSS data to model spatiotemporal traffic behavior and congestion phenomena in dynamic urban environments.
- Applied geodesic computation and GNSS correction techniques to enhance positional accuracy and motion analysis.
- Developed and visualized dynamic traffic flow patterns using Python-based data modeling and geographic mapping.

HONORS & AWARDS

NASA Space Apps Challenge Global Nominee (Team: Vayu)

4 - 5 Oct 2024

NRCC & NASA

Kathmandu

- Developed *Vāyu*, an interactive web app for visualizing NASA's GHG data using NextJS and ThreeJS.

NASA Space Apps Challenge Global Nominee (Team: Saumya Quake)

7 - 8 Oct 2023

NRCC & NASA

Kathmandu

- Developed a web-based application focused on moonquakes, recognized globally for innovation.

VOLUNTEERING

27th SET (Social Service, Environment, Technology) Exhibition

12 Feb 2023

SET Council of St. Xavier's College

- Physics experiment demonstrator: volunteered to showcase notable physics experiments, focusing on R-S Flip-Flop.

LEADERSHIPS/ COMMUNITY SERVICE

Mentor: Slisha NGO

6 - 29 Jan 2024

Location: Khokana, Lalitpur

- I taught math, science, and English to grade 8 and 9 students at the Slisha Learning Center in Khokana, providing academic support.

Mentor: LaTeX Workshop

20 - 29 Oct 2024

Online

- Conducted sessions on TikZ, PGFPlots, and Beamer presentations.

Facilitator: Book Free Friday Project

15 Feb.- 20 July, 2024

Location: Kathmandu

- Facilitated STEAM-based activities for government school students, fostering problem-solving and creativity, organized by Kathmandu Metropolitan City

Rural Immersion Camp

4 - 6 June 2024

Location: Shree Neelakantha Higher Secondary School, Laharepauwa-1, Rasuwa

- Conducted engaging science demonstrations for Grade 8 students on the specific heat capacity of water, Pascal's Law, and Pythagoras' theorem, explaining the underlying scientific principles.
- Conducted hands-on session, made an instrument to measure the height of an object using a protractor, string, and paper.

REFERENCES

Some references are hyperlinked to the title and others are available upon request.