



Taha S. Kachwala
Energy Science and Engineering
Indian Institute of Technology Bombay

21D170043
Dual Degree (B.Tech. + M.Tech.)
Gender: Male
DOB: 15/04/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	
Intermediate	CBSE	Bright Day School, CBSE Unit, Harni, Vadodara	2021	95.60%
Matriculation	CBSE	Global Discovery School, Harni, Vadodara	2019	93.80%

Pursuing a Minor degree in the **Biosciences and Bioengineering** Department

SCHOLASTIC ACHIEVEMENTS

- Ranked **2nd** amongst the 2021 undergraduate batch of the Energy Science and Engineering Department (2022)
- Awarded **AA** grade in EN212 (Electrical Machines), EN218 (Energy Resources, Economics, and Environment), and EN204 (Material Science for Energy Applications) for excellent academic performance in those courses (2022)
- Secured All India Rank of **1592** in JEE Advanced amongst **1.41 lakh** candidates conducted by IIT Kharagpur (2021)
- Achieved **99.88** percentile amongst over **14 lakh** aspirants who appeared for JEE Mains conducted by NTA (2021)

PROFESSIONAL EXPERIENCE

Energy Systems Design Trainee | Cosmo Powertech Pvt. Ltd. (Dec'22-Jan'23 & May'23-Jun'23)

- Contributed to a **3-person** team responsible for evaluating the theoretical viability of integrating a **Parabolic Trough Concentrator** into a **solar thermal** powered system designed for residential and commercial air conditioning
- Utilized **E20** sheet and **HAP** software to ascertain the optimal cooling capacity for a 3 BHK residence (**767 sq. m**)
- Conducted thorough **international market research** on **10+** Parabolic Trough Concentrator (PTC) manufacturers
- Designed a PTC with a theoretical optical concentration ratio of **43** and max theoretical **optical efficiency** of **76%**
- Proficiently simulated the **PTC** using the **Tonatiuh** software, employing the **Monte Carlo Ray tracing** method

TECHNICAL TEAM

Solar Engineer | SPART - Solar Powered Airship Racing Team, IIT Bombay (Dec'22-Present)

A 4-tier team consisting of 40+ members aiming to represent India at the World Solar Airship Race in December'24

- Aiming to represent India by building a **solar-powered autonomous airship** to fly across the South Atlantic
- The airship will be covering **6000+ km** distance using Hydrogen as lifting gas to promote sustainable air transport
- Co-authoring on paper titled "**Modelling & Simulation of Solar PV System for Airship Applications**" to be presented at **International Conference of Electric Airships-Decarbonizing Aviation** in Nurnberg, Germany
- Conducting extensive research on diverse varieties of **solar cells** and **fabrication methods**, with the purpose of establishing an **in-house solar panel fabrication facility** to meet the requirements of the solar-powered airship

KEY PROJECTS

Energy Sector Analysis - United States of America

(Jan'23-Apr'23)

Course Project | Energy Resources, Economics and Environment (EN218)

Professor Sandeep Kumar

- Analyzed US energy data, presented findings via **Energy Balance** Table, **Sankey** Diagram, and **PECSS** Diagram
- Attained comprehensive insights into USA's **emissions data**, analyzing various **policy** implications and challenges
- Implemented **Logistic Curve** analysis to evaluate **Reserve/Production Ratios** for Coal and Oil for India and USA

SSNNL Canal Top Solar Power Plant Study

(Jul'22)

Course Project | Energy Engineering Fundamentals (EN110)

Professor Shireesh B. Kedare

- Explored the **10MW** segment at Sama, Vadodara, gaining a comprehensive understanding of operations (including **Strings**, **SMJBs**, **IGBTs**, **Inverters**, and **Transformers**), maintenance, and risk management strategies employed
- Methodically calculated and derived an estimated value for the lifetime output and **lifetime efficiency** of the plant

Data Analysis: Performance of 2500rpm 20kg Petrol Engine

(Sep'22)

Course Project | Thermodynamics and Energy Conversion (EN203)

Professor Asish Kumar Sarangi

- Thoroughly **analyzed** and **plotted 700+** data points of a **real engine** using an unknown gas as the working fluid
- Conducted an estimation of the work done and **polytropic index** for the working fluid throughout the compression and expansion processes, calculated the Indicated Mean Effective Pressure (**IMEP**) using Microsoft Excel functions

Simulation and Analysis of Two Dimensional Fluid Flow

(Apr'23)

Course Project | Transport Phenomena (EN214)

Professor Manaswita Bose

- Utilized a two-dimensional geometry and boundary conditions created in **OpenFoam** to solve the **Navier Stokes** for Laminar flow, visualized the results using a velocity profile on **ParaView**, and compared to an analytical profile
- Created a **wedge-shaped** geometry in OpenFoam to solve the Navier Stokes Equ, and used ParaView to analyze it

Impact of Fiscal Policy on Economic Recession | FinSearch

(Jul'23-Present)

A research-driven program in the field of Finance and Investment

Finance Club, IITB

- Gained a deeper understanding of the various economic indicators of recession including the Volatility Index (**VIX**), **GDP Contraction**, Low Industrial Output and Sales, Growing unemployment rate, and **Inverted yield curve**
- Analyzing about the different **fiscal policies** implemented by the governments of the United States and India to combat the **economic recession** caused by the COVID-19 Pandemic and help its citizens in every way possible

TECHNICAL SKILLS

Programming	C/C++, Python, NumPy, Pandas
Softwares	Tonatiuh, Simulink, System Advisor Model, Microsoft Excel, OpenFoam, LATEX ParaView, Adobe Photoshop, Adobe Illustrator, Figma, Blender, MATLAB

KEY COURSES UNDERTAKEN

Energy	Solar Photovoltaic, Fundamentals, Technologies, & Applications, Energy Resources, Economics & Environment, Solar Energy Lab*, Energy Engineering Fundamentals, Material Science for Energy Applications, Renewable Energy Technologies
Maths & Physics	Introduction to Numerical Analysis, Linear Algebra, Differential Equations, Calculus I, Calculus II, Quantum Physics and Application, Basics of Electricity & Magnetism
Miscellaneous	Data Analysis & Interpretation, Thermodynamics & Energy Conversion, Electrical Machines, Electrical Machines & Power Electronics Lab*, Power Generation & System Planning*

(* - To be completed by Jun'24)

POSITIONS OF RESPONSIBILITY

Class Representative | DESE, IIT Bombay

(Jul'23-Present)

Elected representative by the students of the 2021-26 batch of the Department of Energy Science and Engineering

- Representing and advocating for the **interests** of students of the 2021-26 batch of Energy Science and Engineering
- Liaison between students and faculty, effectively **addressing concerns** to maintain a positive learning environment

Publicity Coordinator | Techfest, IIT Bombay

(Jun'22-Jan'23)

Asia's largest Science and Technology Festival | Events: 100+ | 1,80,000+ Footfall

- Worked in a team of **12** members involved in publicizing various events of TechFest to **3000+** colleges **globally**, managing the TechFest (TF) College Ambassador Program with **3,000+** College Ambassadors across the nation
- Negotiated a barter deal worth **1.5 Million INR** with a Digital Outdoor Advertising Media company on behalf of TF
- Creating content and managing social media handles of TechFest, namely, Facebook (**3M+** followers), Instagram (**56.5K+** followers), and Twitter (**24K+** followers) to increase public awareness about the events of TechFest

EXTRA-CURRICULAR ACTIVITIES

Sports	<ul style="list-style-type: none">Participated in the Football GC at NCC IIT Bombay as Goalkeeper for Charlie TeamTook part in Kho-Kho Inter-Hostel General Championships '22-'23 on behalf of Hostel 5Part of the Charlie Company Kabaddi Team taking part in Sports GC, NCC IIT BombayAttended the 8-day-long Combined Annual Training Camp 410, '22 at NCC IIT Bombay
Culturals	<ul style="list-style-type: none">Won the Debate General Championship at NCC IIT Bombay for the Charlie CompanyTook part in the Photography GC competition for the theme "LIFE" at NCC IIT BombayParticipated in Photography Inter-Hostel General Championships'22-'23 from Hostel 5Hosted the cultural showcase held at LTPCSA Auditorium at the end of CATC-410, '22
Miscellaneous	<ul style="list-style-type: none">Completed the Finlatics Financial Markets Experience Program, also awarded a LoRWon district-level Bournvita GK Quiz contest backed by Derek O' Brian & Associates 2016Head Boy Global Discovery School, Vadodara '17-'18