

## Statement of Purpose

My interests lie primarily in the areas of design, dynamics, and controls of mechanical systems. I aspire to pursue a Master of Technology in Mechanical Engineering at Indian Institute of Technology Bombay in pursuit of a research career.

Since my childhood, I was very fond of different tools, equipment, and machines. I remember whenever I was getting any toys, I used to disassemble them to optically discern what components are required to build them. Disassembling their parts, detaching the motor, and fitting them back used to give me different happiness. My curiosity towards machines and machinery equipment has commenced incrementing day by day. And I opt to study mechanical engineering after culminating my high school, where I utilized time exploring the automotive field, learning mechanism, design methodology, optimization, and their application.

Being a mechanical engineer, I always wanted to explore more mechanical components and strive to understand their design and functions. I am fascinated to learn knowledge of design methodology and analysis strategies to conduct research and engender an efficient part to counter the modern problem in an engineering field. So, I am inclined to continue my master's, where I can prepare myself for tomorrow in developing groundbreaking technology and inventing solutions. I will persist my research in the field of mechanical components design and development to contribute towards the progress of society with new technology and innovation.

During my under-graduation, many subjects laid a foundation for my technical background in light of my future. I was the top scorer in the subjects Engineering Design, Machine Drawing and Solid Modelling, Internal Combustion Engine, Production Process, Workshop Practice, and Machine Element Design Practice. One of the best learning experiences that I have had in the degree program was my final year project, titled "Design and Simulation of Customized Brake Rotor for an All-Terrain Vehicle", where I studied the design methodology and various parameters to create different design patterns followed by optimization after numerous iteration in Ansys. Also, in third year I had designed and made a prototype of an electronic sensor device to automatically control the high and low beam of a car headlight.

In addition to my academic course, I got a chance to be a part of the Society of Automotive Engineers (SAE) through which I explored the practical insights of my course subjects. I gained rich practical experience from designing and manufacturing an off-road race car for BAJA SAE, where I was involved in 3D designing, SWOT analysis, structural and fatigue analysis, and re-engineering of various components. I worked in a subsystem where I designed a custom gearbox for achieving the desired transmission ratio, brake pedal with balance bar mechanism for applying independent force to different wheels, design of other components like hub, knuckle, wheel assembly, chassis, and brake rotor. Later, lead the teams as a President to build a lightweight and robust vehicle at low cost by performing design simplification.

Immediately after undergraduation, I joined Bajaj Automobiles as an engineer and learned about the working and functions of various parts of the vehicle along with their manufacturing process. I had gained practical experience of how any components are brought into the application from design to manufacturing utilizing several methods. Later, worked in an engineering department and designed a manufacturing process for the development of various 2-wheeler components, where I deal with CAD, CAM, and CMM software to optimize the process. Now, I want to enlighten my knowledge to conduct independent, innovative and applied research employing latest concepts in mechanical field.

At this juncture of my career, the decision to study masters is a result of my research on the internet. The program offered here is holistic and comprises intriguing subjects like design engineering, manufacturing engineering, thermal and fluid engineering, and many more. It would be an honor to work under the guidance of eminent professor where I can learn about design and optimization of mechanism, analysis technique, dynamics systems and controls, internal combustion engines, system analysis and design, and more. I am fully aware that pursuing a masters at this university would require a high level of intellectual curiosity and dedication. And my interest and desire will always remain high in contributing towards research and development using my ideas and concepts.

This program meets my interest and will help me in developing my skills and knowledge for inventing a new product, utilizing design concepts and optimization techniques. Moreover, I look forward in getting proper guidance and facilities to learn about the design methods to carry out an effective product and system design. I strongly feel that the Masters in Mechanical Engineering from your esteemed University would provide me with a plethora of opportunities for intensive research to attain my dreams.