

STUDENT REPORT ON INTERNATIONAL EXPERIENCE PROGRAMM 2024

DISCIPLINE:

- MECHANICAL ENGGINERING

SUBJECTS:

- DESIGN OF MACHINE ELEMENTS
- QUALITY AND RELIABIITY
- SUMMER INTERNSHIP

REPORTED BY:

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DURATION: 28th JUNE – 31st JULY 2024

INTRODUCTION

Internationalisation of Education is the need of the hour in this globalising world. To contribute towards this Gujarat Technical University has initiated International Experience Programme whereby students from various Courses like Engineering, Pharmacy, Management, and Architecture are sent to various foreign universities to get an international education and cultural exposure.



A team of 16 students from Mechanical branch from various colleges affiliated to GTU visited the University of Wismar, Germany and university of Szczecin, Poland under this programme. At the University of Wismar, the tradition of engineering education began in 1908 with the founding of the "Ingenieur-Akademie Wismar". For more than 100 years, Wismar has been a place of practical engineering education, today united under the umbrella of the Faculty of Engineering, Civil Engineering, Electrical Engineering & Computer Science, Mechanical Engineering / Process & Environmental Engineering in Wismar and Malchow on Poel and Maritime in Rostock Warnemünde.

REPORT FROM 29/6/2024 – 12/7/2024

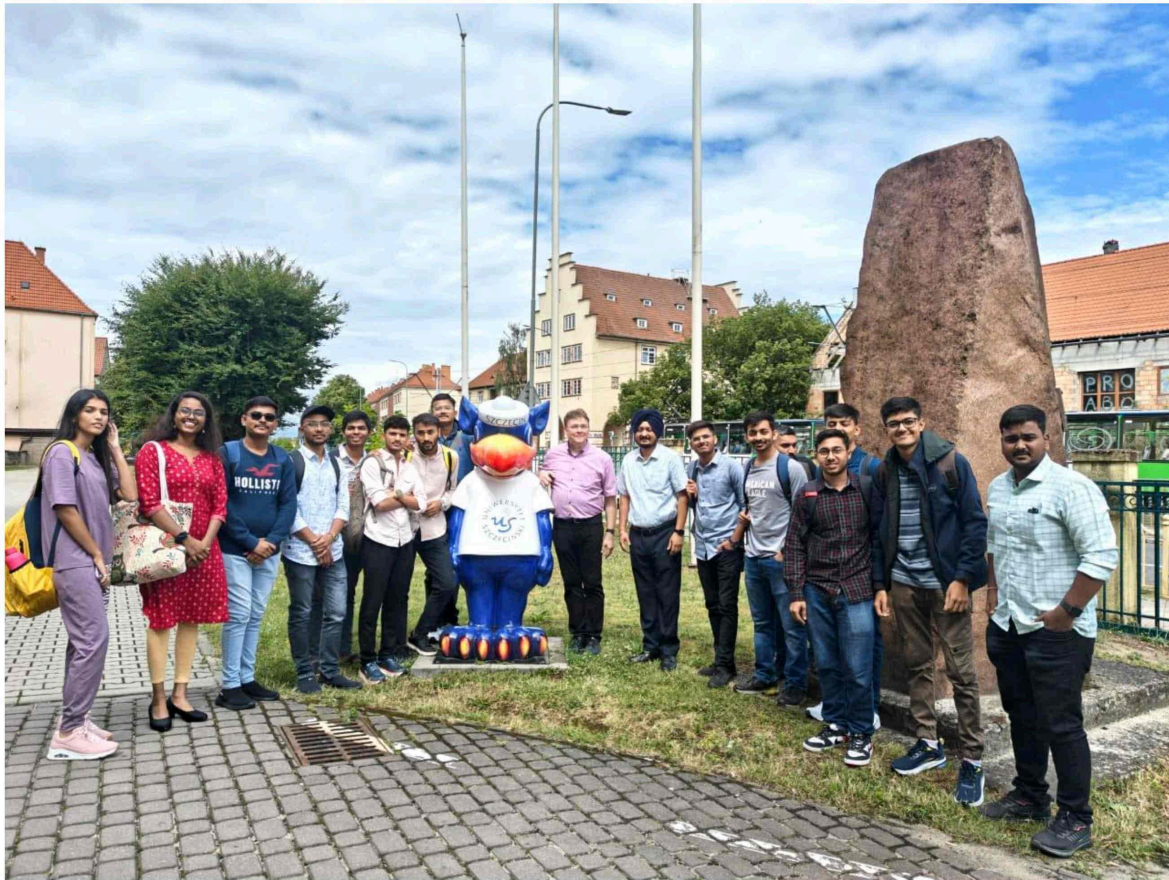
We arrived at Berlin Airport at 2 PM and then embarked on the next leg of our journey to Poland. A bus provided by GTU transported us to our dormitory, where we were greeted with warmth and hospitality by Professor Maggie and Professor Norbert. They facilitated our check in by distributing room keys and the Wi-Fi password, ensuring we were settled in comfortably. Additionally, they provided us with utensils for cooking and took the time to thoroughly explain the rules and regulations of the dormitory. Their support and guidance were instrumental in helping us adjust to our new environment smoothly and efficiently. The following day, we took a much-needed rest to recover from our travels and prepare for the exciting days ahead.



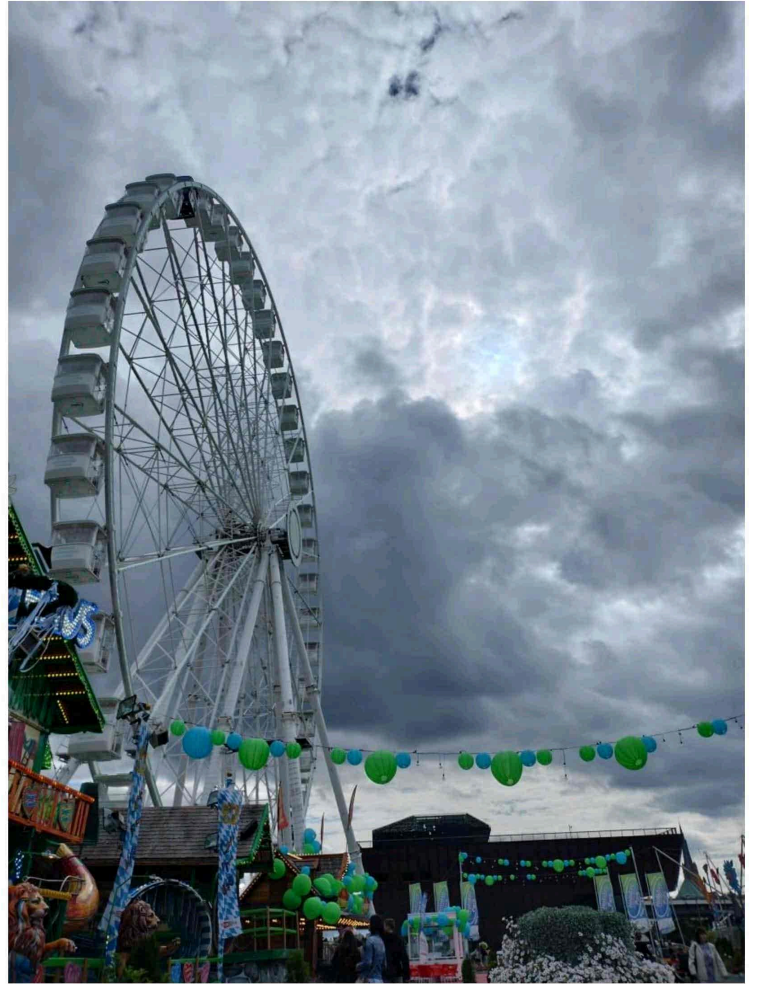
ON THE 1ST OF JULY

we embarked on our academic journey at the University of Szczecin in Poland. Our day began with a warm and insightful introduction from our esteemed faculty members: Professor Norbert, Professor Henrik Schenagas, and Professor Maggie. They welcomed us with open arms and provided a comprehensive overview of the program, setting the tone for an enriching experience ahead. Following the introduction, Henrik Sir commenced his lecture on the subject of Quality and Reliability. His expert guidance and clear explanations laid a solid foundation for our understanding, marking the beginning of an exciting and informative chapter in our studies.



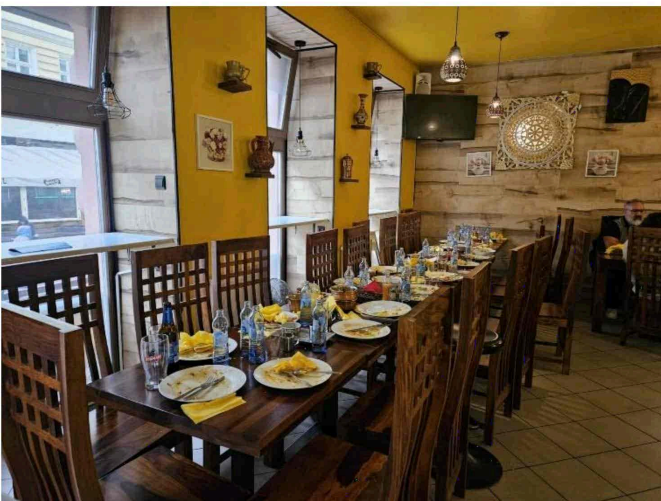


After returning from the university and making our way back to the dormitory via tram—tickets graciously arranged by Maggie Ma'am—we took the evening to relax and settle into our new surroundings. The next day, we eagerly set out to explore the local area, and our adventure led us to the Holiday Amusement Park. This delightful excursion allowed us to immerse ourselves in the local culture and enjoy a day filled with thrilling rides and vibrant attractions. The park provided a welcome respite from our academic schedule, offering both fun and relaxation. The photographs below beautifully capture the joy and excitement of our visit, preserving the unforgettable moments of our exploration.



ON THE 4th OF JULY

we were treated to a splendid dinner at Nepali Chulo, a venue renowned for its warm ambiance and exquisite cuisine. The evening was marked by a sense of elegance, as everyone dressed to impress, adding a touch of sophistication to the gathering. We indulged in a rich tapestry of Indian cuisine, sampling a diverse array of dishes that were as delicious they were varied. The presence of our professors, who joined us for the occasion, further enhanced the experience, fostering a sense of community and camaraderie. As we shared laughter and engaging conversation over a sumptuous meal, the evening unfolded into a truly memorable and beautiful celebration, one that we will cherish for its warmth, enjoyment, and the delightful company



ON THE 9th OF JULY

we had the privilege of visiting, a distinguished firm in the electrical engineering sector. Dressed in formal attire, we were welcomed with exceptional professionalism. The visit began with an insightful presentation about the company, which provided a thorough overview of their operations. This included their expertise in preparing electric projects and documentation, delivering comprehensive electrical supply solutions, and offering specialized services to the shipyard industry. We were particularly impressed by their capabilities in designing and prefabricating electrical switchboards, and we gained valuable knowledge about the advanced batteries used in maritime applications. The visit also featured a guided tour of their production area, where we observed the detailed processes involved in manufacturing and assembling these essential systems. To express their appreciation, Elektryka Morska presented us with thoughtful gifts, including branded mugs, diaries, and other mementos. These tokens, along with the informative presentation and tour, made the visit both enlightening and memorable, enriching our understanding of the industry. After our enlightening visit to Elektryka Morska, we made our way back home via tram, reflecting on the invaluable experiences and insights gained throughout the day. The journey offered us a moment to appreciate the knowledge we had acquired and the professionalism of the company we had just toured. Upon returning to our dormitory, we took the opportunity to rest and recuperate, allowing ourselves to unwind from a fulfilling and informative day. The overall experience was both enriching and memorable, marking a significant highlight of our time abroad.

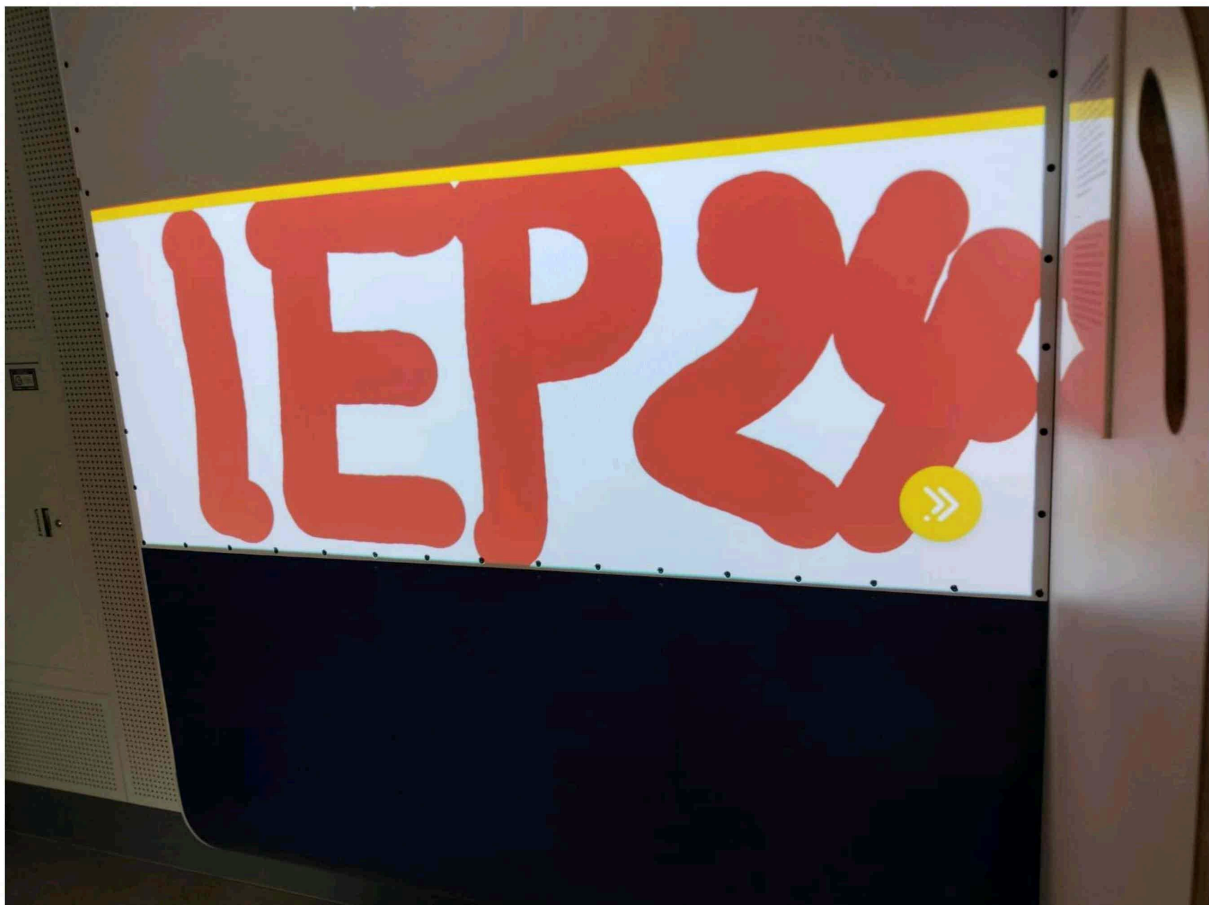
SOME MEMORIES OF THE VISIT





ON THE 10th OF JULY

we had the pleasure of visiting the Maritime Science Center in Szczecin, Poland. The tickets for this fascinating excursion were thoughtfully arranged by Norbert Sir and Maggie Ma'am, and we were delighted to have Henrik Sir join us as well. Our exploration of the center was both educational and enjoyable, as we engaged with interactive exhibits, marveled at historical maritime artifacts, and experienced the ship simulators. The aquariums offered a captivating look at marine life, and the educational workshops provided deeper insights into maritime science and technology. This visit was a thoroughly enriching experience, and we had a wonderful time delving into the wonders of the maritime world.







ON THE 12th OF JULY

we undertook our Quality and Reliability exam, scheduled from 10 AM to 12 PM. This examination, carrying a weight of 70 marks, was a crucial assessment of our understanding of the subject matter. The preparation leading up to the exam was intense, reflecting the comprehensive nature of the course content and the importance of the evaluation. The exam itself was well-structured and effectively covered the key areas of Quality and Reliability that we had studied. The thorough and clear instruction we received from Henrik Sir played a significant role in our readiness. His detailed explanations and extensive coverage of the subject matter provided us with a solid foundation, enabling us to approach the exam with confidence. Throughout the course, Henrik Sir's teaching methodology emphasized not just theoretical knowledge but also practical applications, ensuring we could apply concepts in real-world scenarios. This approach was evident during the exam, as the questions required both an understanding of the principles and the ability to implement them effectively. Our performance in the exam was a testament to the high-quality education we received. Overall, the Quality and Reliability exam was a positive and affirming experience. It highlighted the effectiveness of the instruction and the thorough preparation we underwent. The comprehensive coverage of the course material and the practical insights provided by Henrik Sir ensured that we were well-equipped to tackle the challenges of the exam,

making it a true reflection of our learning and capabilities.



REPORT FROM 13/7/2024 – 31/7/2024

ON THE 13th OF JULY

our group transitioned to Bad Doberan, Germany. The transportation, a bus, was meticulously arranged by Norbert Sir, ensuring a smooth and organized journey. Upon arrival, we promptly moved into our dormitory accommodations, efficiently unloading our luggage. Norbert Sir provided us with essential items, including keys and utensils, along with detailed instructions to facilitate our stay. Following the systematic setup, we took the opportunity to rest and acclimate to our new environment, ready to embark on the next phase of our program. The new dormitory in Bad Doberan was notably comfortable and well-appointed. Set amidst lush greenery, it featured a charming garden-like sitting area just outside the door, complete with tables and chairs, perfect for enjoying meals outdoors. The living facilities were excellent, with a fully equipped kitchen that included separate refrigerators for each room, as well as an oven, induction stove, and toaster. This thoughtful arrangement ensured convenience and a pleasant living experience for all residents.



ON THE 14th OF JULY

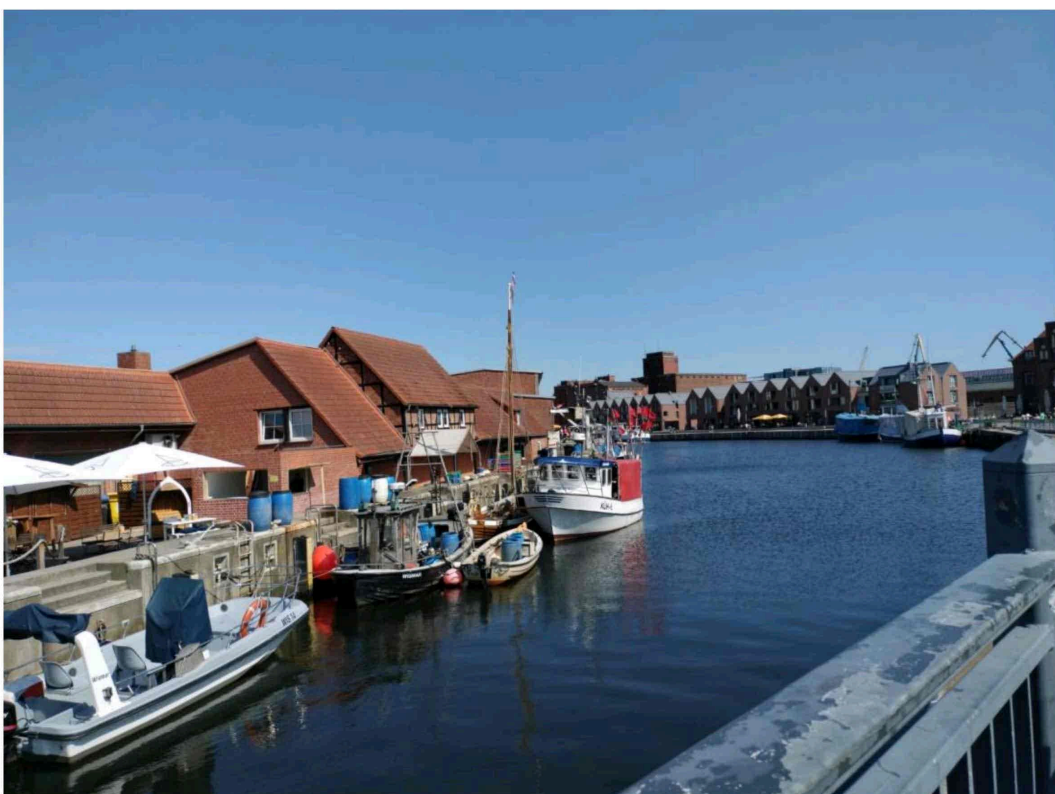
we had the pleasure of hosting Norbert Sir, his wife, Professor Maggie, and their daughter, Sophie, for dinner. We meticulously prepared a traditional Indian meal, featuring Pav Bhaji, which we made ourselves. To enhance the dining experience, we also crafted delightful desserts, including Gajar Ka Halwa and Gulab Jamun, complemented by refreshing Chaas as a drink. The effort we put into preparing these dishes was well worth it, as our guests were visibly delighted and thoroughly enjoyed the meal. The evening didn't end with dinner. After the meal, we engaged in a fun and interactive session of Lego games, fostering a warm and friendly atmosphere. The combination of good food, great company, and enjoyable activities made for a truly memorable experience for everyone involved. This dinner not only allowed us to share a piece of our culture through cuisine but also strengthened the bonds within our group and with our gracious hosts.





ON THE 15th OF JULY

our group embarked on a journey from Bad Doberan to Wismar University, traveling via bus and train. The journey took approximately 1.5 hours, offering us a scenic view of the German countryside. Upon arrival, we were warmly welcomed by Henrik Sir, who greeted us with great enthusiasm. Henrik Sir took us on a comprehensive tour of Wismar city, providing us with a rich historical context and highlighting the city's architectural marvels. We explored the charming old town, which is renowned for its well-preserved medieval buildings and cobblestone streets. The tour also included visits to significant landmarks such as the Wismar Market Square and the iconic St. George's Church, giving us a deeper appreciation of the city's cultural heritage. The city tour concluded with a visit to Wismar University, where we were introduced to the campus and its facilities. Henrik Sir provided insights into the university's academic programs, research opportunities, and collaborations with industry partners. This experience not only enhanced our understanding of Wismar's historical and cultural significance but also underscored the university's commitment to academic excellence and innovation.







On the same day as our visit to Wismar University, we had the opportunity to visit NORD Drive Systems. The visit included a comprehensive presentation on their company and its operations, providing us with valuable insights into their industry-leading products and innovative solutions. This visit was an integral part of our educational tour, enhancing our understanding of advanced drive technology. During the presentation, we learned about NORD's extensive range of products, including gear units, electric motors, and frequency inverters. The detailed discussion covered the various types of gear units such as helical, parallel shaft, helical-bevel, helical-worm, and worm gear units. We gained an appreciation for the reliability and efficiency these products offer across different applications. Additionally, the presentation highlighted the variety of electric motors NORD manufactures, emphasizing their compliance with international efficiency standards and their availability in multiple configurations. The session also shed light on NORD's focus on innovation and sustainability. We were impressed by their commitment to research and development, aiming to continuously improve their products and adapt to market needs. The presentation highlighted NORD's efforts to enhance energy efficiency and reduce environmental impact through their advanced drive systems. This focus on sustainability not only aligns with global environmental goals but also provides significant cost savings and operational benefits to their clients.

Furthermore, we were introduced to NORD's global presence and the wide range of applications for their drive systems. With subsidiaries and service centers in over 98 countries, NORD ensures robust local support and expertise for their customers. The presentation illustrated how their products are used in diverse

industries, from food and beverage to automotive and wastewater treatment. This visit to NORD Drive Systems enriched our knowledge of the drive technology sector and showcased the practical applications and benefits of their cutting-edge solutions.

SOME MEMORIES OF THE VISIT



From the next day, we commenced our new subject, Design of Machine Elements, under the guidance of Henrik Sir in the well-equipped classrooms of Wismar University. The initiation of this course marked an exciting new chapter in our educational journey, promising a deep dive into the principles and practices of machine design. The classroom facilities at Wismar University were exceptional, providing an ideal learning environment. State-of-the-art equipment and resources were readily available, enabling us to engage with the subject matter effectively. The infrastructure supported interactive learning, and the availability of advanced tools and technologies greatly enhanced our understanding of complex concepts in machine design. Additionally, we were provided with Wi-Fi access throughout the university, facilitating seamless connectivity and access to digital resources. This allowed us to conduct research, collaborate on projects, and stay updated with the latest developments in the field. The conducive learning environment and comprehensive support at Wismar University significantly enriched our educational experience, fostering both academic growth and practical skills.



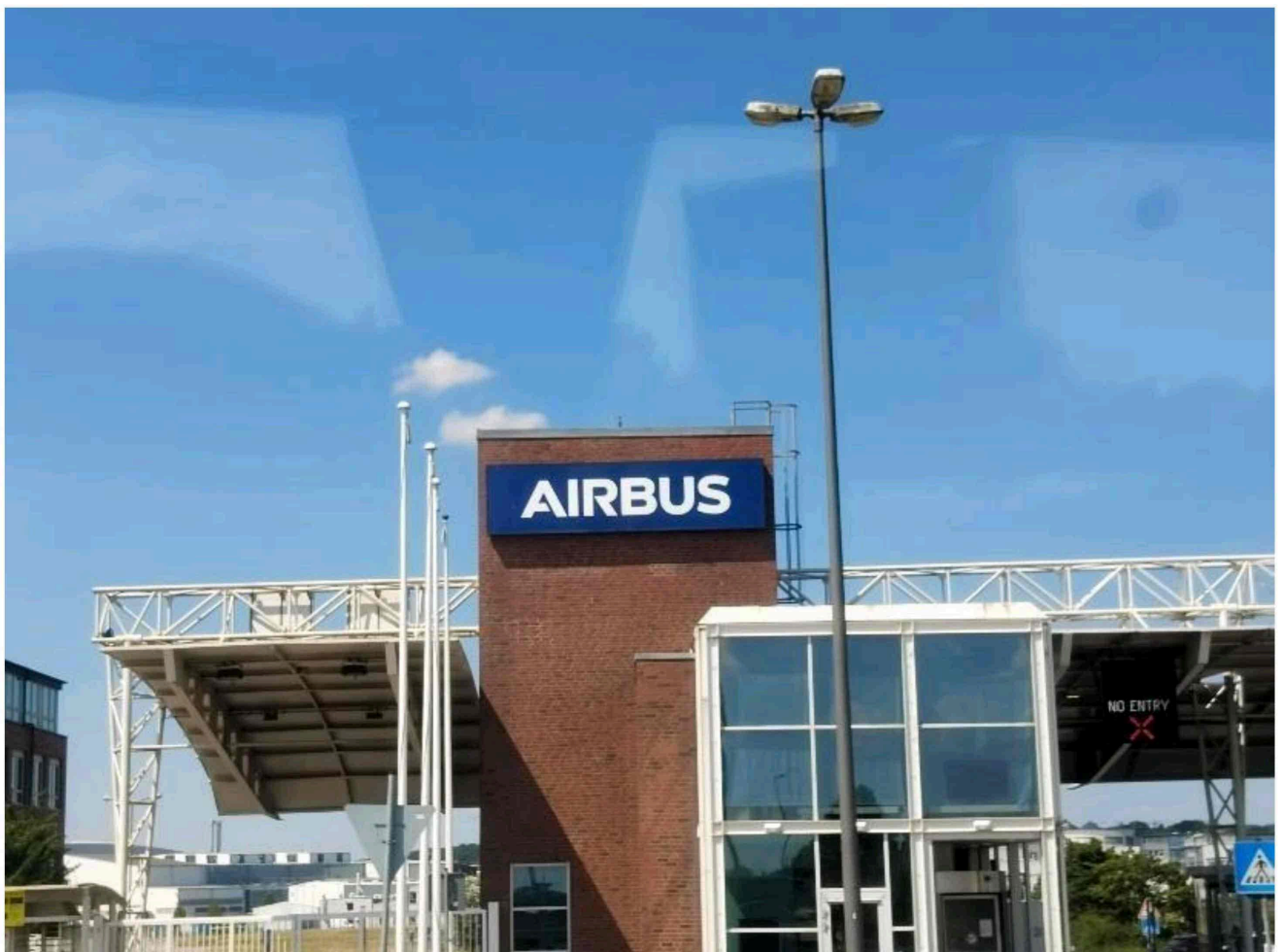


ON THE 20th OF JULY

we had the privilege of visiting Airbus in Hamburg, Germany, for an insightful industrial tour that lasted for two hours. This visit provided us with an in-depth understanding of one of the world's leading aerospace manufacturers, renowned for its innovation and technological advancements in the aviation industry. Upon our arrival, we were warmly welcomed by the Airbus team and given an overview of the company's history, achievements, and future goals. The presentation highlighted Airbus's significant contributions to the aerospace sector, including their commitment to sustainability and advancements in aircraft technology. This introduction set the stage for the rest of our visit, giving us a solid foundation of knowledge about the company's operations and vision. A knowledgeable lady from the Airbus team guided us through various aspects of aircraft design and manufacturing. She explained the different families of Airbus airplanes, such as the A319, A320, and the A380, detailing the unique features and capabilities of each model. Her detailed presentation covered the materials used in the construction of these planes, emphasizing the critical role of joints and rivets in ensuring structural integrity. We delved into the advantages and disadvantages of using aluminum versus carbon fiber, with aluminum being lightweight and cost-effective, while carbon fiber offered superior strength and corrosion resistance despite its higher expense. She also discussed the intricate process of material selection and testing, highlighting how Airbus balances these factors to optimize performance and safety in their aircraft designs. Furthermore, we learned about the global collaboration involved in Airbus manufacturing, where different parts of the aircraft are produced in various countries and then assembled in Hamburg. For instance, the wings are manufactured in the United Kingdom, the fuselage sections come

from Germany, the tail and final assembly take place in France, and the horizontal tailplane is made in Spain. This international production network exemplifies Airbus's integrated approach to utilizing the best resources and expertise from different regions, ensuring the highest quality and efficiency in their aircraft. Overall, the industrial visit to Airbus in Hamburg was an enriching experience that provided us with a deeper appreciation of the aerospace industry. The tour not only showcased Airbus's technological prowess and innovative capabilities but also highlighted the company's commitment to excellence and sustainability. This visit significantly broadened our understanding of aircraft manufacturing and inspired us to think about the future possibilities in this dynamic field

SOME MEMORIES OF THE VISIT





ON THE 22nd OF JULY

we visited the Volkswagen Museum, where we explored an extensive collection of vehicles that showcased the evolution of automotive design and technology. The exhibits featured classic Volkswagen vans and buses, renowned for their distinctive design and cultural impact. We also saw models from Audi and Porsche, reflecting the diverse range of automotive innovation under the Volkswagen Group. Additionally, the museum displayed a single scooter, emphasizing Volkswagen's broad approach to personal transportation. This visit provided us with a comprehensive understanding of Volkswagen's rich history and ongoing advancements in the automotive industry



ON THE 24th OF JULY

we went to a visit of the workshop of the university by Prof. Henrik Schnegas. The workshop was very well equipped with CNC machines, 3D Printer, some basic machines like old Lathe Machine, Milling machines and many other machines. The workshop was well organized and some small and big projects were also displayed which were made by students of university







ON THE 25th OF JULY

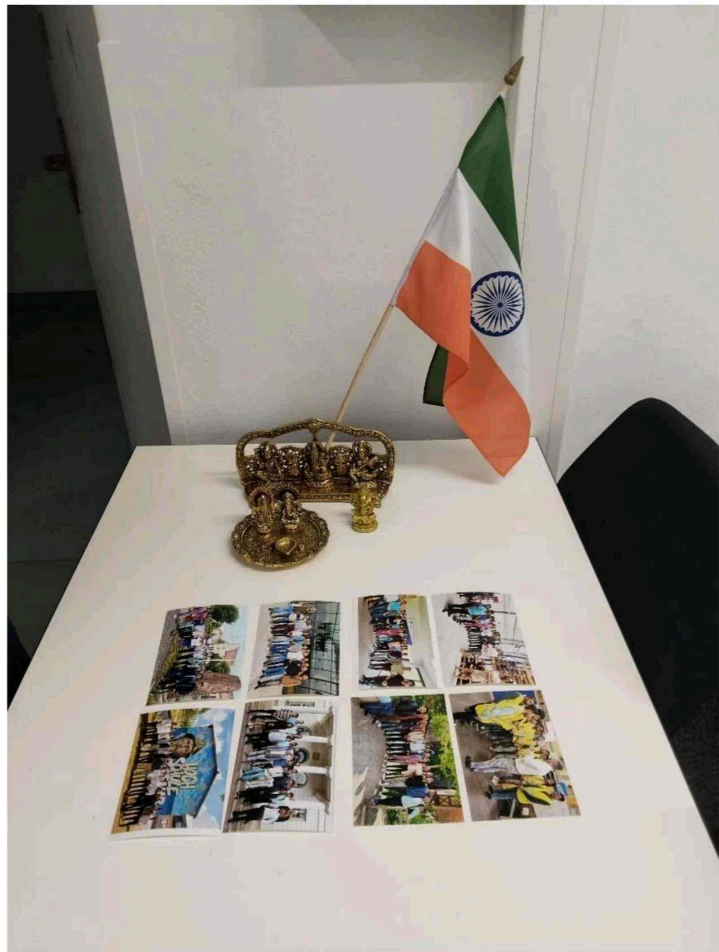
we had the honour of meeting the Mayor of Wismar. During the meeting, the Mayor provided us with an insightful briefing about the city, detailing its rich history, cultural heritage, and current developments. His presentation highlighted Wismar's significance as a historical port city and its role in the region's economic and cultural landscape. Following the briefing, our mentor, Professor P.S. Mann, presented a thoughtful gift to the Mayor. The gesture was warmly received and underscored the cordial and respectful nature of the visit. The exchange exemplified the strong relationship between our group and the local community. Overall, the meeting with the Mayor of Wismar was a memorable and enriching experience. It offered us a deeper appreciation of the city's heritage and strengthened our connection with the local authorities. The respectful exchange and the meaningful gift from Professor Mann added a special touch to this significant event.





ON THE 26th OF JULY

we undertook our examination for the Design of Machine Elements course. The exam was scheduled from 10:00 AM to 12:00 PM and was designed to test our understanding of the key concepts covered throughout the course. As the exam approached, we dedicated significant time to preparation, reviewing essential topics and refining our problemsolving skills to ensure we were well-prepared. The examination, which carried a weight of 70 marks, encompassed a range of questions that assessed our grasp of machine design principles, materials, and engineering calculations. The two-hour duration required us to manage our time effectively, applying theoretical knowledge to practical scenarios and demonstrating our ability to analyze and design various machine elements. Overall, the exam provided a comprehensive evaluation of our learning and application of the course material. The preparation and examination experience not only reinforced our understanding of machine design but also offered valuable insights into the practical aspects of engineering. The process underscored the importance of rigorous study and effective time management in achieving academic success

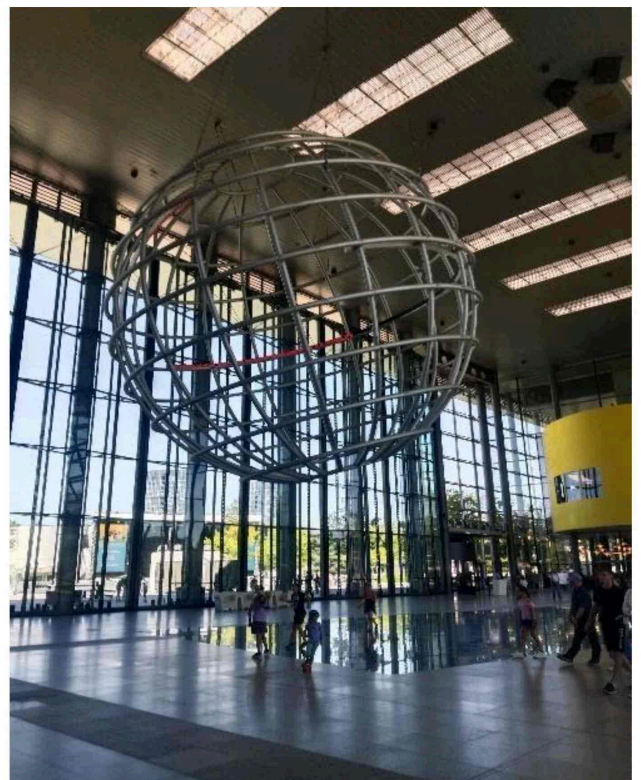


ON THE 29th OF JULY

we embarked on an industrial visit to Volkswagen's state-of-the-art facility in Wolfsburg. This visit provided us with a fascinating insight into one of the most advanced automotive manufacturing environments in the world. The tour began with our group being transported via bus across the expansive site, reflecting the scale and complexity of the operations at Volkswagen's Wolfsburg plant. As we were moved from one area to another, we were introduced to the highly automated nature of the production processes. The facility is renowned for its integration of cutting-edge robotics and automated systems, which streamline production and enhance efficiency. This automation is pivotal in ensuring precision and consistency across the manufacturing stages, highlighting Volkswagen's commitment to innovation and technological advancement. Upon entering the main production area, we observed the welding operations, which are a critical component of the vehicle assembly process. Advanced robotic systems performed welding tasks with remarkable speed and accuracy, underscoring the role of automation in maintaining high-quality standards. We were able to witness firsthand the meticulous process of joining metal components, which is crucial for the structural integrity of the vehicles. Our tour also included various operational tests conducted within the facility. These tests are designed to ensure that each vehicle meets rigorous safety and performance standards before leaving the production line. The testing process was thorough and well-organized, reflecting Volkswagen's dedication to quality control and reliability. At the Volkswagen Wolfsburg plant, two of the primary car models manufactured are the Volkswagen Golf and the Volkswagen Tiguan. These models are central to Volkswagen's lineup and are produced using highly automated and efficient manufacturing processes. Each car takes approximately 2.5 days to manufacture, and production is initiated

only after an order is placed, reducing inventory and ensuring each vehicle meets specific customer requirements. A particularly engaging part of the visit was the opportunity to observe these processes while seated in an open car. This unique vantage point allowed us to see the manufacturing environment up close, providing a tangible sense of the scale and sophistication of the operations. It was an immersive experience that offered a clear perspective on how advanced technology and human expertise combine to produce high-quality vehicles. Overall, the visit to Volkswagen Wolfsburg was an enlightening experience that showcased the pinnacle of automotive manufacturing technology. The tour highlighted the seamless integration of automation and quality control in the production process, reinforcing our understanding of modern industrial practices and the importance of innovation in the automotive industry.

SOME MEMORIES OF THE VISIT





The culmination of our academic journey was marked by a memorable ceremony on the final day, where we were awarded certificates for completing the subjects Quality and Reliability and Design of Machine Elements, as well as our summer internship. Norbert Sir graciously distributed the certificates, and everyone captured the moment in photographs, preserving the memories of our achievements and the bonds we formed. Henrik Sir added a special touch to the event by creating a photo album that featured various group photos taken throughout our time together. This thoughtful gesture allowed us to relive the experiences and friendships we built during the program. In addition to the photo album, he generously gave chocolates to everyone, adding a sweet note to the celebration. Maggie Ma'am, along with other professors, conveyed their heartfelt sentiments to the group. Their words reflected the pride they felt in our accomplishments and the growth we had demonstrated. The ceremony was a fitting end to an enriching and rewarding experience, leaving us with lasting memories and a sense of fulfillment as we looked forward to our future endeavors. On July 31st, 2024, at around 2 AM, we departed from Bad Doberan, marking the end of a remarkable journey. Norbert Sir and Henrik Sir were there to bid us farewell, a gesture that made the departure both significant and emotional. Their presence and goodbyes underscored the deep connections we had formed during our time together. As we left, emotions ran high. The bonds we had created, the knowledge we had gained, and the experiences we shared made this journey unforgettable. The farewells were heartfelt, and it was evident that this experience had left a lasting impact on everyone. We knew we would always remember this period with fondness and gratitude. Our flight from Berlin departed at 9:40 AM, and we arrived in Ahmedabad on August 1st, 2024, at 6:15 AM. The transition from the intense emotions of departure to the routine of travel was profound. The

journey back home was filled with reflections on the incredible experiences and the invaluable lessons we had acquired, marking the end of an enriching chapter in our lives.

