SUMMER INDUSTRIAL TRAINING 2024 REPORT



TRAINING OBJECTIVES

- To develop hands-on experience with industry-specific tools and technologies
- To enhance critical thinking and analytical skills through practical challenges
- To enhance communication, teamwork, and leadership skills
- To improve time management and project management abilities

SELECTION PROCESS

- Total no. of students registered: 105
- No. of students selected: 65
- Selection criteria: First Come First Serve
- Only Jamia Hamdard students
- B. Pharm 4th, 6th and 8th semester, B. Tech (Food Tech) 4th semester
- Minimum 90 % attendance is mandatory

WEEKLY ACTIVITIES

WEEK 1 Lecture Series	WEEK 2-3 Hands-On Training & Monograph preparation	WEEK 4-5 Industrial Training	WEEK 6
 Orientation and Introduction Welcome address and overview of the program. Introduction to pharmaceutical sciences, and food sciences along with their career opportunities. Lecture Series In-depth sessions covering key topics in pharmaceutical sciences and food sciences. Guest lectures by industry professionals and academic experts. Interactive discussions and Q&A sessions. 	 Practical Sessions Identification and authentication of medicinal plants Physicochemical parameters Extraction of plant materials/formulations Marker identification TLC & HPTLC Bioautography Antioxidant activity Microscopy In-silico studies Toxicity studies (Cell lines/zebrafish) GC-MS Supercritical Fluid Extraction Proximate analysis Monograph drafting and formatting Hands-on practice in quality control and safety measures in food processing Survey and referencing 	 Production QA/QC Analysis R&D Pharmacovigilance Market Research Marketing CRO Pharmacy 	 Report submission Evaluation & Valedictory function

WEEK 1: LECTURE SERIES

Day 1

Lecture 1: Basic Concepts and Industry Trends in Pharmaceutical Drugs

Speaker: Dr. Raj K. Shirumalla, Mission Director, BIRAC, DBT, Govt. of India



Dr. Raj K. Shirumalla initiated the lecture series with an insightful discussion on the fundamental concepts of pharmaceutical drugs. He emphasized the importance of understanding both the kinetic and dynamic aspects of drugs to develop effective and safe pharmaceutical products. He highlighted the critical roles of various domains within the pharmaceutical industry and the potential career paths available in vigilance, regulatory affairs, marketing, and bioanalysis.

Lecture 2: Pharmacovigilance as a career Speaker: Dr. Manoj Kumar Sharma, Head & QPPV, Global Pharmacovigilance Department at Win Medicare Pvt. Ltd.



Dr. Manoj Kumar Sharma provided an in-depth exploration of pharmacovigilance, its significance, and the career opportunities it offers. He illustrated the crucial role of pharmacovigilance in ensuring drug safety and protecting public health. He detailed the processes involved in monitoring drug safety and the various career paths in pharmacovigilance, emphasizing the growing demand for skilled professionals in this field.

Lecture 3: Pharmaceutical Sales and Marketing Speaker: Ritu Katyal Mehrotra, Unifaith Biotech Pvt. Ltd



Ritu Katyal Mehrotra focused on the functions and dynamics of the sales and marketing departments within the pharmaceutical industry. She emphasized the collaborative efforts between sales and marketing teams to drive product success. She provided a detailed overview of the roles and responsibilities in each domain, highlighting the skills required for professionals in sales and marketing. Lecture 4: Regulatory Provisions for ASU Drugs Speaker: Dr. Mohammad Khalid, Assistant Drug Controller cum Licensing Authority (Unani), Government of NCT of Delhi



Dr. Mohammad Khalid's lecture addressed the regulatory framework governing Ayurvedic, Siddha, and Unani (ASU) drugs. He gave the overview of the Drugs and Cosmetics Act, 1940, and the Drugs and Cosmetics Rules, 1945, as they pertain to ASU drugs.

Dr. Khalid highlighted the importance of adhering to regulatory provisions to ensure the safety and quality of ASU drugs. He provided practical guidance on navigating the regulatory landscape and obtaining necessary approvals for ASU drug products.

Day 2

Lecture 1: Medical Writing and Clinical Trial Transparency

Speaker: Dr. Shalini Dwivedi, Krystelis



Dr. Shalini Dwivedi opened Day 2 with a comprehensive discussion on the roles of medical writing and the importance of clinical trial transparency in the pharmaceutical industry. Dr. Dwivedi emphasized the critical role of medical writing in documenting and communicating clinical trial results. She highlighted the importance of transparency in clinical trials to foster trust among stakeholders, including patients, healthcare providers, and regulatory authorities.

Lecture 2: Plant Systematics and Its Importance in Industry Speaker: Dr. Roshni Rajamohan Mathur, Delhi University



Dr. Roshni Rajamohan Mathur's lecture focused on plant systematics and its significance in various industries. Dr. Mathur illustrated the importance of plant systematics in industries such as pharmaceuticals, agriculture, and biotechnology. She emphasized the need for accurate plant identification and classification in research and development. Lecture 3: Role of Advanced Chromatographic Techniques in Quality Control of Herbal Products Speaker: Dr. Rajesh Kumar Verma, Group Lead, R&D Analytical Development, Dabur India Limited



Dr. Rajesh Kumar Verma's presentation covered advanced chromatographic techniques and their application in the quality control of herbal products. Dr. Verma highlighted the crucial role of advanced chromatographic techniques in ensuring the quality and safety of herbal products. He detailed the various methods used to analyze and control the composition of these products.

Lecture 4: Pharmacovigilance **Speaker:** Dr. Sarfaraj, Quality Assurance Head, Sun Pharma



Dr. Sarfaraj provided an in-depth discussion on pharmacovigilance, focusing on its critical components and processes. Dr. Sarfaraj emphasized the importance of pharmacovigilance in maintaining drug safety and efficacy. He detailed the processes involved in monitoring and managing drug risks, underscoring the need for continuous vigilance. Lecture 5: Sales and Marketing Speaker: Mr Mansoor Ali, Chief Sales and Marketing Officer, Hamdard Laboratories India (Food Division)



Mr. Mansoor Ali concluded the day with a comprehensive discussion on sales and brand marketing, particularly in the context of the pharmaceutical and food industries. Mr. Mansoor Ali concluded the day with a comprehensive discussion on sales and brand marketing, particularly in the context of the pharmaceutical and food industries.

Day 3

Lecture 1: Drug Safety and Clinical Research: Grounding Scope

Speaker: Dr. M. Wasif Khan, Head of Global Pharmacovigilance and Global QPPV, EVOLET Healthcare



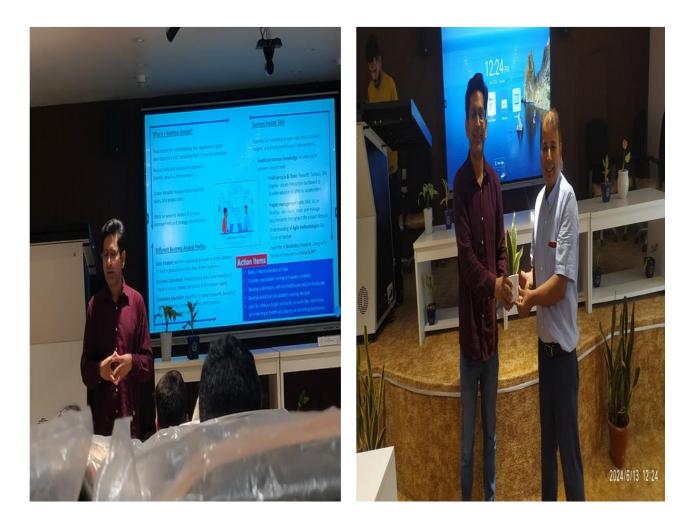
Dr. M. Wasif Khan began the day's series with a comprehensive discussion on drug safety and clinical research, covering the fundamentals and historical aspects of pharmacovigilance. Dr. Khan emphasized the importance of pharmacovigilance in ensuring drug safety and efficacy. He provided a historical perspective to highlight the evolution of drug safety practices and discussed various career paths in this critical field.

Lecture 2: Market Research Speaker: Dr. Abdul Wahid Khan, BIS Research



Mr. Abdul Wahid Khan provided a detailed overview of market research processes and data analysis techniques. Mr. Khan highlighted the significance of market research in making informed business decisions. He provided practical examples of data handling and pivot analysis, demonstrating their importance in deriving actionable insights from market data.

Lecture 3: Personal Journey and Skill Development Speaker: Mr. Sarfaraz, Business Analyst, TCS



Mr. Sarfaraz shared his personal journey from college to his current role at TCS, offering insights into the skills and tools necessary for success in the field of business analysis. Mr. Sarfaraz provided a motivational account of his professional journey, emphasizing the importance of perseverance and adaptability. He encouraged participants to focus on acquiring relevant skills and staying updated with industry trends.

Lecture 4: Drugs Regulation in India Speaker: Mr. Tanveer Ahmed, Manager of Regulatory Affairs, Takeda Biopharmaceuticals India



Mr. Tanveer Ahmed discussed the regulatory landscape of pharmaceutical drugs in India, drawing from his professional experiences. Mr. Ahmed shared valuable insights into the regulatory framework governing pharmaceuticals in India. He highlighted the critical role of regulatory affairs professionals in ensuring compliance and facilitating drug approvals.

Lecture 5: Macrophages to Fight Metabolic Disorders Speaker: Dr. Mohd. Shahid, Rosalind Franklin University of Medicine and Science



Dr. Mohd. Shahid provided an engaging lecture on his research into macrophages and their role in metabolic disorders. combating Dr. Shahid highlighted the potential of macrophages in shared addressing metabolic disorders. He his research findings and emphasized the importance of translational research in developing new therapeutic strategies.

Lecture 6: Finding Your Career Path and Startup Insights Speaker: Mr. Amit Verma, CEO, Unilever



Mr. Amit Verma shared his professional journey and insights on identifying career interests and starting a successful business. Mr. Verma inspired participants to pursue careers aligned with their passions. He provided practical advice on entrepreneurship, encouraging aspiring entrepreneurs to embrace challenges and persist in their efforts. Lecture 7: Bioequivalency, Safety, and Bioanalysis Speaker: Dr Asjad Nabi Khan Sherwani, Quality Assurance, Sun Pharma



Mr. Asjad Shervani concluded the day's lectures with a focus on bioequivalency, safety, and bioanalysis in the pharmaceutical industry. Mr. Shervani emphasized the critical role of bioequivalency and bioanalysis in ensuring the safety and efficacy of pharmaceutical products. He provided detailed explanations of the methods used in these processes.

Day 4

Lecture 1: Medical Scientific and Regulatory Writing

Speaker: Dr. S. Ziaul Abrar Husain, Senior Associate in Global Safety Team, Reckitt Benckiser, Gurgaon



Dr. S. Ziaul Abrar Husain began the final day of the lecture series with a detailed presentation on medical scientific and regulatory writing. Dr. Husain emphasized the critical role of medical and regulatory writing in the pharmaceutical industry. He highlighted the skills required for these roles and the importance of producing clear and compliant documentation.

Lecture 2: Toxinomy

Speaker: Dr. Masood Shah Khan, Senior Associate, Consumer Safety, Inhalation & Pest Regulatory Affairs & Safety, Reckitt Benckiser Pvt. Ltd.



Dr. Masood Shah Khan's lecture focused on toxinomy, the study of toxins, their classification, and their effects. Dr. Khan provided a comprehensive overview of toxinomy, emphasizing the importance of understanding toxin classification and regulatory aspects to ensure consumer safety. Lecture 3: Green Chemistry: An Essential Building Block for Sustainable Development Speaker: Dr. Indu Tucker Sidhwani, Gargi College, DU



Dr. Indu Tucker Sidhwani delivered a lecture on the principles of green chemistry and its application in the pharmaceutical industry for sustainable development. Dr. Sidhwani highlighted the importance of green chemistry in promoting sustainability and reducing the environmental impact of the pharmaceutical industry. She discussed practical examples of green methodologies and their benefits. Lecture 4: Career Prospects in Germany Speaker: Dr. Suboor Bakht, Director & Representative, University of Heidelberg



Dr. Suboor Bakht provided a short talk on career prospects in Germany, focusing on opportunities for internships, master's programs, PhDs, and jobs. Dr. Bakht encouraged participants to explore educational and career opportunities in Germany. He provided practical advice on navigating the application process and highlighted the benefits of pursuing higher education and career development in Germany. Lecture 5: Prevention of Biodiversity and Intellectual Property Rights Speaker: Dr. Yasheswar Singh, Delhi University



Dr. Yasheswar Singh discussed the importance of biodiversity conservation, intellectual property rights, and the Nagoya Protocol. Dr. Yasheshwar emphasized the need for biodiversity conservation and the protection of intellectual property rights. He discussed the significance of the Nagoya Protocol in promoting fair and equitable sharing of benefits arising from the use of genetic resources.

Lecture 6: Clinical Compensation, Blinding, and Randomization

Speaker: Dr. Arun Gupta, Director, Ayu Swasth Pvt. Ltd. India



Dr. Arun Gupta's lecture focused on key concepts in clinical trials, including clinical compensation, blinding, and randomization. Dr. Gupta provided a detailed overview of essential components of clinical trials. He emphasized the importance of ethical practices, blinding, and randomization in conducting robust and reliable clinical research. Lecture 7: Costing of Marketing Products and Career Goals Speaker: Dr. Vandita Srivastava, Freelance Consultant



Dr. Vandita Srivastava concluded the lecture series with a discussion on the costing of marketing products and career goal setting. Dr. Shivastava provided practical advice on managing marketing costs and setting career goals. She encouraged participants to identify their interests and strengths, and to develop a strategic plan for achieving their career objectives.

WEEK 2-3: HANDS-ON TRAINING

In total, the trainees developed monographs of 17 plants, and several physicochemical, phytochemical and pharmacological parameters were assessed for each. The experiments included:

- Extraction
- TLC
- HPTLC
- Cell Culture
- Toxicity Studies
- Ash Value
- Water soluble ash
- Acid Insoluble ash
- Loss on Drying
- Protein determination
- Fat Content determination
- Microscopic characteristics
- Macroscopic characteristics
- Bioautography
- Network pharmacology

• Identification/authentication and physicochemical characterization



The students performed identification, authentication, and physicochemical characterization of herbal drugs. They conducted botanical identification through morphological and microscopic examinations. The procured selected plant materials were authenticated in-house and voucher specimens were deposited in the laboratory. The plant materials for coarsely powdered assessment of were physicochemical parameters such as ash value, water soluble extractive, acid insoluble extractive, etc.

• Microscopic characterization



Transverse section and powder microscopy of the plant materials was performed for the authentication of the parts such as leaves, flowers, stems, roots, seeds, fruits, etc. During the summer industrial training, students performed microscopic characterization of herbal drugs, focusing on identifying key anatomical features. Using light microscopy, they examined transverse sections of plant materials, identifying cellular structures such as trichomes, stomata, and vascular bundles. Detailed observations included the presence of calcium oxalate crystals, fibers, and starch grains, which are critical for authenticating and differentiating plant species. Students also learned to prepare and stain samples to enhance the visibility of these structures. This handson experience provided practical skills in botanical microscopy and emphasized the importance of microscopic analysis in ensuring the quality and purity of herbal drugs. The training reinforced theoretical knowledge with practical application, enhancing students' understanding of plant anatomy and its role in drug identification.

• Extraction



The coarsely powdered materials were accurately weighed and extracted using suitable solvents. Aqueous, alcoholic and hydroalcoholic (50: 50) extracts were prepared for each plant material. The prepared extracts were thereby concentrated using water bath. Solvent extraction was conducted using methanol and/or water. The plant material was soaked in the solvent, followed by agitation to enhance the extraction efficiency. After the extraction period, the mixture was filtered to remove solid residues. The filtrate was concentrated using water bath to obtain crude extracts. This hands-on experience provided students with practical knowledge of the extraction process and its importance in natural product research.

• Sample preparation



For TLC analysis, the concentrated extract was dissolved in a small volume of solvent to make the sample solution. The sample solution was then spotted onto a TLC plate, which was developed in a solvent system to separate the components. After development, the plate was visualized using UV light or chemical staining reagents to obtain the fingerprint pattern, which was recorded for further analysis and comparison. The concentrated plant extracts were thereby reconstituted in methanol for TLC and bioautographic identification.

• TLC fingerprinting and HPTLC bioautography



The reconstituted samples of the plant extracts (30 mg/mL) were used for the development of TLC fingerprints and HPTLC bioautography for the identification of antioxidant metabolites. During the summer industrial training, TLC fingerprinting and HPTLC antioxidant bioautography were employed to

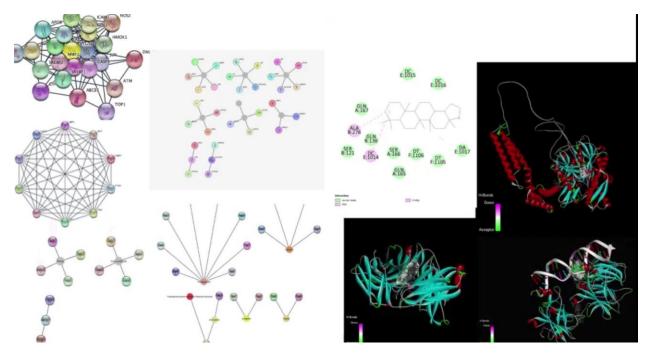
analyze herbal extracts. TLC fingerprinting provided a rapid and effective method for profiling the phytochemical constituents of the extracts, revealing distinct bands under UV light indicative of various compounds. HPTLC antioxidant bioautography combined the high-resolution separation capabilities of HPTLC with the DPPH assay to visualize antioxidant activity directly on the chromatogram. Active antioxidant compounds appeared as yellow bands against a purple background, indicating their ability to scavenge free radicals. This method allowed for the identification and comparison of antioxidant constituents within the extracts. Overall, these techniques proved invaluable for both qualitative analysis and the assessment of antioxidant properties in herbal samples.

• Antioxidant assay (DPPH and Reducing power assay)



During the summer industrial training, students conducted antioxidant assays on herbal extracts using the DPPH and reducing power assays. In the DPPH assay, they measured the ability of the extracts to scavenge free radicals by observing color changes and absorbance at 517 nm, indicating radical scavenging activity. The reducing power assay involved mixing extracts with phosphate buffer and potassium ferricyanide, followed by measuring absorbance at 700 nm to assess electron-donating ability. Both assays demonstrated significant antioxidant activities in the herbal extracts. Students gained practical skills in reagent preparation, spectrophotometer use, and data interpretation, understanding the relationship between phenolic content and antioxidant efficacy.

• In silico studies



In the summer industrial training, students conducted in silico studies on the effects of various plants on chronic kidney disease (CKD) using network pharmacology and molecular docking approaches. Network pharmacology was employed to map the interactions between plant bioactive compounds and CKD-related targets, revealing potential therapeutic mechanisms and pathways. Molecular docking simulations were performed to predict the binding affinity of these compounds to key CKD-associated proteins, assessing their potential efficacy as inhibitors or modulators. The results indicated that several plant compounds showed promising interactions with target proteins, suggesting their potential as novel therapeutic agents for CKD. These findings highlighted the utility of computational methods in identifying and validating phytochemicals with therapeutic potential.

• Toxicity studies (in Cell lines and Zebra fish)



During the summer industrial training, students conducted toxicity studies on plants with potential therapeutic effects for chronic kidney disease (CKD). The studies utilized zebrafish to assess cytotoxicity and overall safety. Zebrafish models were used to observe toxicity, with attention to behavioral changes, survival rates, and organ-specific impacts. The findings underscore the importance of thorough safety evaluations in the development of plant-based treatments for CKD.

• Proximate analysis



In the summer industrial training, students conducted proximate analysis of various plant samples to determine their nutritional composition. The analysis involved assessing moisture content, ash value, crude protein, crude fat, crude fiber, and carbohydrate content. Moisture content was measured to evaluate the water retention of the plants. Ash value indicates the total mineral content. Crude protein and fat analyses determined the nutritional value of the plant material, while crude fiber assessment provided insights into the dietary fiber content. Carbohydrate content was calculated by difference. The results demonstrated variations in the nutritional profiles of the plant samples, highlighting the importance of proximate analysis in understanding their potential as dietary sources and their applications in the food and herbal industries.

WEEK 4-5: INDUSTRIAL TRAINING

Post hands-on training in the laboratory, students were grouped and sent to different industries for exposure. The industries included:

- AIMIL Pharmaceuticals
- Unifaith Biotech
- Fermish Clinical Technologies
- BIS Research
- Win Medicare

• AIMIL Pharmaceuticals









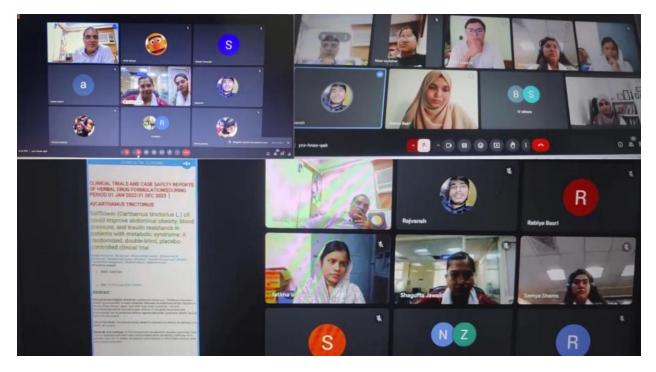
• Fermish Clinical Technologies



• BIS Research



• Win Medicare



WEEK 6: CAREER COUNSELLING, INDUSTRIAL VISIT, PRESENTATIONS AND EVALUATION

• Career counselling

B. Pharm and M. Pharm students were also benefited from career counseling sessions led by internationally studying and working alumni of Jamia Hamdard. These sessions provided valuable insights into global career opportunities and industry trends, enhancing students' understanding of various career paths in pharmacy. Alumni shared their professional experiences, offered guidance on skill development, and advised on strategies for succeeding in a competitive job market. This initiative not only motivated students but also equipped them with practical knowledge and networking opportunities, helping them make informed career decisions and better preparing them for future challenges in their professional journeys.

Noted alumni present in the career counseling through online/offline mode:

SUMMER INDUSTRIAL TRAINING 2024	
CAREER COUNSELLING SCHEDULE OF	B PHARM/ M PHARM
STUDENTS ON 15 TH JULY 2024	
1. PROF (DR) KHALID HAKIM, KSA,	10:00 AM
2. PROF (DR) ZIAYUR RAHMAN, USA	10:30 AM
3. MR UZAIR ALI, USA	11:00 AM
4. MS RAKHI JHA, CAREER COUNCELLOR,	11:30 AM
5. PROF (DR) MOHD SHAHID, USA,	2:0 PM
6. PROF (DR) RAFI AHMED, NORWAY,	2:30 PM
7. DR MOHD SAJJAD, AUSTRALIA,	4:0 PM
8. MR SHOZAB ANSARI, IRELAND	3:0 PM
9. DR WASHIM KHAN, USA:	5:0 PM





• Industrial Visit

During the summer industrial training, B.Pharm and M.Pharm students visited Dabur, a leading herbal and natural products company. The visit provided students with valuable insights into the pharmaceutical manufacturing process, including raw material sourcing, production techniques, quality control, and packaging. Students observed the integration of advanced technology with traditional practices, highlighting Dabur's commitment to innovation and quality. The tour included



demonstrations of manufacturing processes, quality assurance protocols, and an overview of research and development activities. This exposure enhanced the students' understanding of industrial practices and the application of theoretical knowledge in a real-world setting, bridging the gap between academia and industry.

• Presentations and evaluations





The presentations of B.Pharm/M.Pharm students' who underwent summer industrial training showcased a diverse range of research and practical experiences. The presentations were evaluated for selection of best trainees. Students demonstrated their engagement in various aspects of pharmaceutical sciences, including the analysis of herbal drugs using techniques such as TLC, HPTLC bioautography, and in silico studies. They presented their findings on the physicochemical characterization, antioxidant activities, and toxicity studies in zebrafish, highlighting their ability to apply theoretical knowledge to practical scenarios. They also presented their learnings during their industrial training. The evaluations reflected their strong understanding of experimental methodologies, data interpretation, and critical analysis. Overall, the presentations indicated a high level of competence and enthusiasm among the students, with commendable skills in research and practical application, suggesting their readiness for future professional challenges in the pharmaceutical industry.

Valedictory Ceremony



The Summer Industrial Training 2024 Valedictory Ceremony was held on August 2, 2024, at the COE Auditorium, Jamia Hamdard. Organized by the Centre of Excellence in Unani Medicine (CoE UM), the event marked a significant occasion to celebrate the achievements of students, industry partners, and trainers involved in the summer training program.

The ceremony began with a warm welcome extended to the dignitaries, setting a formal tone for the event. Following this, the recitation of the Holy Quran infused a spiritual essence into the gathering. The Hamdard Tarana was then played, evoking a sense of pride and belonging among the attendees.

A planter presentation and the felicitation of dignitaries followed, during which esteemed guests were honored for their valuable contributions. **Prof. Sayeed Ahmad**, the Organizing Chairman and Director of CoE (UM), delivered the welcome note, acknowledging the collective efforts of everyone involved in the training program. Subsequently, **Prof. Farhan Jalees Ahmad**, Dean of

SPER, Jamia Hamdard, addressed the audience, sharing insights and experiences related to the program and emphasizing its impact on student development.

Guest of Honor, **Prof. Abdul Wadud**, Former Director of NIUM, offered his perspective on the significance of the training and extended his congratulations to the trainees. Another Guest of Honor, **Prof. Rasheeduz Zafar**, Former Dean of SPER, Jamia Hamdard, stressed the importance of such programs in shaping the future of students. The ceremony continued with the felicitation of industry partners, trainers, and students, recognizing their hard work and dedication throughout the training.

A highlight of the event was the launch of **FOODNAMA**, the Department of Food Technology's newsletter. This publication aims to provide updates and insights into the department's activities and accomplishments. Following this, **Prof. M Afshar Alam**, Vice Chancellor of Jamia Hamdard and Patron of the event, delivered the Presidential address. He outlined the institution's vision and future plans, inspiring the audience with his words.

The Vote of Thanks was presented by **Dr. Rabea Parveen**, Assistance Professor, SPER, Jamia Hamdard. She expressed heartfelt gratitude to all participants, organizers, and attendees for their contributions to the success of the event.

The ceremony concluded with the National Anthem, which instilled a sense of unity and patriotism among the attendees. Lunch was then served, offering an opportunity for informal interaction and networking among the participants, further enriching the experience.

Notable Dignitaries Present:

- Janab Hammad Ahmed: Chief Guest, Chancellor, Jamia Hamdard
- Prof. M Afshar Alam: Patron, Vice Chancellor, Jamia Hamdard
- Prof. Rasheeduz Zafar: Guest of Honor, Former Dean, SPER, Jamia Hamdard
- Prof. Abdul Wadud: Guest of Honor, Former Director, NIUM
- Prof. Farhan Jalees Ahmad: Dean, SPER, Jamia Hamdard
- Prof. Suhel Parvez: Dean, SIST, Jamia Hamdard
- **Prof. Sayeed Ahmad:** Organizing Chairman, Director, CoE (UM)

Overall, the valedictory ceremony was a significant event, marked by thoughtful addresses, recognitions, and the launch of an informative newsletter, making it a memorable occasion for all present.