Faculty Development Programme (FDP)
Data-Driven Research with Advanced Data Analysis Tools

The inauguration of the one - week faculty development program on **Data-Driven Research with Advanced Data Analysis Tools** was held during September 20-26, 2023. In which Dr. H. S. Hota, Head, Department of Computer Science and Application, Atal Bihari Vajpayee University, Bilaspur highlighted the program's focus on equipping participants with advanced data analysis tools and techniques, emphasizing the critical role of data-driven research in today's rapidly evolving academic and professional landscape. Dr. Hota's comprehensive overview ignited a sense of curiosity and enthusiasm among the participants, setting the stage for an intellectually stimulating week ahead. Following Dr. Hota's informative address, Dr. Rashmi Gupta, coordinator of the program, give vote of thanks. She expressed her deep appreciation to Dr. Hota for his invaluable insights and contributions to the FDP. Dr. Rashmi also extended her gratitude to the participants, faculty members. The inauguration ceremony concluded on a note of gratitude and anticipation, setting a positive tone for the week ahead.

Expert – Dr. Pushkar Dubey, Pt. Sunderlal Sharma Open University, Bilaspur (C.G.)

Topic – Introduction of SPSS software

In this session, Dr. Pushkar Dubey has introduced participants to the world of Statistical Package for the Social Sciences (SPSS) software, a vital tool in research and data analysis. The session commenced with an overview of the software's significance and a guided tour of the SPSS user interface. Dr. Dubey provided hands-on experience in data entry, and manipulation, and emphasized the critical role of data preparation. He encouraged participants to explore SPSS's advanced features for in-depth statistical analysis and visualization. The interactive Q&A session allowed participants to clarify doubts and left them eagerly anticipating upcoming sessions where they will delve deeper into SPSS's applications. Overall, the session was informative and engaging, equipping participants with valuable skills for their research endeavors.

Expert – Dr. Sujit Kumar Mishra, Guru Ghasidas University, Bilaspur (C.G.)

Topic – Statistical methods on quantitative data using SPSS.

The Faculty Development Program (FDP) Session 2, led by Dr. Sujit Mishra, was a highly informative and impactful session on "Statistical Methods for Quantitative Data using SPSS." Dr. Mishra adeptly covered the fundamentals of statistical analysis, types of quantitative data, and the practical application of SPSS software. Participants gained valuable insights into data preparation, descriptive and inferential statistics, and engaged in hands-on exercises. The session not only met its objectives but also left attendees better equipped to apply statistical methods in both research and teaching.

Expert – Dr. Sharda Bharti, NIT, Raipur (C.G.)

Topic – Introduction of Design Experts.

In this session, Dr. Sharda Bharti, a distinguished expert from the National Institute of Technology (NIT) Raipur, introduced participants to the powerful world of "Design Expert" software. This session was dedicated to unveiling the potential of Design Expert in experimental design and data analysis, shedding light on its immense significance in both research and industry applications. Dr. Bharti, with her profound knowledge, began by emphasizing the pivotal role of experimental design in research and production processes. She meticulously guided the participants through the software's user interface, unraveling its menus, toolbars, and essential features. Real-life examples and case studies illuminated the practical utility of the software, providing participants with a deeper understanding of its capabilities. The interactive Q&A session that followed further enriched participants' comprehension, leaving them eager to explore and apply Design Expert in their future research and practical projects. Dr. Bharti's expertise and engaging teaching style were deeply appreciated by the participants, who now look forward to embarking on their journey of harnessing the potential of Design Expert for their academic and industrial pursuits.

Expert – Dr. Seema Belorkar, Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Topic – Introduction of Experiment Design in Design Expert Tool.

The fourth session of the Faculty Development Program (FDP), featuring Dr. Seema Belorkar from Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur, was a profound exploration of experiment design using the Design Expert tool. Dr. Belorkar commenced the session by highlighting the pivotal role of experimental design in research and development, elucidating its core principles. The Design Expert software, a powerful tool in this context, was introduced, with participants gaining insight into its user interface and functionalities. Through practical demonstrations and real-life case studies, Dr. Belorkar illustrated how to

design experiments, set factors and responses, and optimize processes using Design Expert. Hands-on practice allowed participants to apply their newly acquired skills. The session left participants eager to incorporate experiment design principles and Design Expert into their research and industrial projects, as they expressed their gratitude to Dr. Seema Belorkar for her expertise and engaging teaching style.

Expert – Prof. Naval Bajpai, IIITM, Gwalior (M.P.)

Topic – Data Analysis using Statistical Tool.

The fifth session of the Faculty Development Program (FDP), featured Prof. Naval Bajpai as the distinguished speaker. Prof. Bajpai, hailing from the Indian Institute of Information Technology and Management (IIITM) in Gwalior, Madhya Pradesh, delivered an enlightening lecture on the topic of "Data Analysis Using Statistical Tools." The session's main aim was to equip participants with a deeper understanding of how statistical tools can be effectively applied in the realm of data analysis. Prof. Bajpai commenced the session by providing an overarching view of the importance of data analysis and its role in shaping informed decisions across various domains. Throughout the session, he meticulously covered a wide array of statistical tools, including R, Python, and Excel, outlining their respective strengths and practical applications. Practicality was at the core of the session, as Prof. Bajpai elucidated the significance of Exploratory Data Analysis (EDA) and elucidated the intricate process of hypothesis testing. The participants were actively engaged through real-world case studies and practical examples, fostering a dynamic learning environment. Prof. Bajpai's session not only enriched the participants' knowledge but also exemplified the essence of continuous learning and skill development that the FDP strives to promote among educators.

Expert – Dr. Rachna Vishwakarma, Central University of South Vihar, Gaya (Bihar)

Topic – Introduction of AMOS.

The sixth session of the Faculty Development Program (FDP), featured Dr. Rachna Vishwakarma as the distinguished speaker, representing the Central University of South Bihar in Gaya. Dr. Vishwakarma's lecture revolved around the essential topic of "Introduction to AMOS," aimed at providing participants with a robust foundation in structural equation modeling (SEM) using the AMOS software. The session commenced with an illuminating overview of SEM's significance in diverse academic domains, setting the stage for AMOS's introduction. Dr. Vishwakarma meticulously guided participants through the AMOS software, elucidating its user-friendly interface and capabilities for intricate statistical analyses. Practical application was at the forefront, as attendees learned to specify and estimate SEM models, evaluate their fit, and interpret results. The session's

hands-on exercises allowed participants to put theory into practice, fostering a deeper understanding of AMOS's functionalities. Dr. Rachna Vishwakarma's expert guidance not only empowered participants with a valuable skill set but also exemplified the FDP's commitment to nurturing continuous learning and skill development among educators and researchers.

Expert – Mr. Nilesh Verma, Waikaito University, New Zealand

Topic – Programming in Python (Basic).

The seventh session of the Faculty Development Program (FDP), featured Mr. Nilesh Verma as the distinguished guest lecturer, representing Waikato University in New Zealand. Mr. Verma's lecture, centered on "Programming in Python ", aimed to equip participants with a strong foundation in Python programming. Participants delved into Python's syntax, grasping essential concepts such as variables, data types, and basic operations. Mr. Verma adeptly guided the attendees through control structures, elucidating the intricacies of if statements, loops, and conditional statements. Furthermore, he shed light on functions and modules, showcasing their utility in building modular and efficient code. The session's hands-on coding exercises provided a practical dimension to the learning process, enabling participants to translate their newfound knowledge into tangible programming skills. This session was instrumental in fostering Python proficiency among educators and researchers, aligning with the FDP's mission of promoting continuous learning and skill development within the academic community.

Expert – Dr. Vijay Bhaskar Semwal, MANIT, Bhopal (M.P.)

Topic – Statistical Analysis and Machine Learning with Python.

In the eighth session of the Faculty Development Program (FDP), Dr. Vijay Bhaskar Semwal from MANIT Bhopal delivered an insightful lecture on " Statistical Analysis and Machine Learning using Python " . The session focused on the application of statistical techniques in data analysis and the integration of machine learning algorithms using Python programming. Dr. Semwal provided an in-depth understanding of key statistical concepts and demonstrated practical implementations through hands-on examples. The lecture served as a valuable resource for educators aiming to incorporate data-driven approaches into their teaching and research. Participants gained practical insights into leveraging Python for statistical analysis and machine learning, enhancing their skills and knowledge in these crucial areas. The engaging session contributed significantly to the FDP's objective of empowering faculty members with contemporary tools and techniques in the field of data science.

Expert – Dr. Suraj Sharma, Guru Ghasidas University, Bilaspur (C. G.)

Topic – Programming in R (Basic).

The ninth session of the Faculty Development Program (FDP), featured Dr. Suraj Sharma as the distinguished speaker, representing Guru Ghasidas University (GGU) in Bilaspur. Dr. Sharma's lecture, focusing on "Programming in R " aimed to empower participants with fundamental skills in R programming—a vital tool in the realm of data analysis and statistical research. Commencing with an insightful introduction to R's significance in data science and research, Dr. Sharma guided participants through the core elements of R, including data structures, variables, control structures, and functions.. Hands-on exercises provided participants with practical experience, solidifying their understanding of R programming. Feedback from participants resonated with Dr. Sharma's structured teaching approach and the session's practical focus. In essence, the event was a testament to the FDP's dedication to continuous learning and skill development, equipping educators and researchers with the prowess to leverage R effectively in their academic and research pursuits.

Expert – Dr. Vivek Tiwari, IIITM, Gwalior (M.P.)

Topic – Statistical Analysis with R.

The tenth session of the Faculty Development Program (FDP), featured Dr. Vivek Tiwari as the esteemed speaker, representing the Indian Institute of Information Technology and Management (IIITM) in Gwalior. Dr. Tiwari's lecture on "Statistical Analysis with R" aimed to equip participants with a robust understanding of leveraging R for diverse statistical analyses. Commencing with a comprehensive introduction to statistical analysis, Dr. Tiwari seamlessly transitioned into the practical aspects of using R for data manipulation and exploratory data analysis. The session encompassed a wide array of statistical tests, including t-tests, ANOVA, and regression analysis, providing participants with a holistic view of R's analytical capabilities. The inclusion of packages for data visualization further enriched the session, enabling participants to create visually compelling representations of their analyses. The hands-on practical exercises facilitated an immediate application of the learned concepts, solidifying participants' grasp of statistical analysis with R. Feedback from participants highlighted Dr. Tiwari's effective teaching style and the practical relevance of the session content, underscoring the success of the event in promoting proficiency in statistical analysis using R within the academic community.

Expert – Dr. Babita Manjhi, Guru Ghasidas University, Bilaspur (C. G.)

Topic – MATLAB.

The eleventh session of the Faculty Development Program (FDP), featured Dr. Babita Manjhi as the distinguished speaker, representing Guru Ghasidas University (GGU) in Bilaspur. Dr. Manjhi's lecture on "MATLAB Fundamentals" aimed to demystify this powerful software tool widely used in the realms of engineering, research, and data analysis. Commencing with a comprehensive introduction to MATLAB, participants were immersed in its user-friendly environment and fundamental operations. The hands-on experience provided insights into variable declaration, matrix manipulation, and the creation of custom functions and scripts. Dr. Manjhi also emphasized the practical aspects of MATLAB, including data import, numerical computation, simulations, and data visualization. Real-world applications highlighted the software's versatility in solving complex problems and streamlining data analysis workflows. Feedback from participants underscored Dr. Manjhi's effective teaching style, with participants noting the practical relevance of the session content. In essence, the event empowered educators and researchers with the essential skills to leverage MATLAB effectively, aligning with the FDP's mission to foster continuous learning and skill development within the academic community.

Valedictory

At the end of the faculty development programme, a formal valedictory function was held. In this function, many participants shared their feedback about the faculty development Programme. Dr. H.S.

Hota, Head, Department of Computer Science and Application, ABV University, Bilaspur addressed the

participants and wished them a bright future. Dr. Rashmi Gupta, Coordinator, Faculty Development Programme expressed vote of thanks. Total 64 participants were registered in this FDP and certificates were provided to 58 participants.