



DR. BHIMRAO AMBEDKAR UNIVERSITY, AGRA

(Formerly Agra University, Agra)

A+ Accredited by NAAC

Report on

Sustainable Development Goal 9



SDG 9

INDUSTRY, INNOVATION AND
INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and
sustainable industrialization and foster innovation

SDG 9: INDUSTRIES, INNOVATION AND INFRASTRUCTURE

EXECUTIVE SUMMARY

At Dr. Bhimrao Ambedkar University (DBRAU), Agra, innovation, industry collaboration, research excellence, and infrastructure development are integral to the University's vision of fostering inclusive, sustainable, and knowledge-driven growth. Established with a commitment to academic excellence and social responsibility, the University promotes scientific research, technological advancement, entrepreneurship, and community engagement to contribute to regional and national development.

Recognising that innovation, resilient infrastructure, and industry partnerships are essential drivers of economic and social progress, DBRAU continuously strengthens its academic and research ecosystem through interdisciplinary education, industry-oriented programmes, advanced laboratories, digital learning resources, and collaborative research initiatives. The University actively supports Sustainable Development Goal 9 (Industry, Innovation and Infrastructure) by promoting innovation, technology transfer, and research that addresses real-world challenges.

To encourage innovation and entrepreneurship, DBRAU has established an innovation ecosystem through its Institution's Innovation Council (IIC), Entrepreneurship Development Cell (EDC), Intellectual Property Rights (IPR) Cell, and incubation initiatives. These platforms provide mentoring, skill development, innovation challenges, startup awareness programmes, and guidance on intellectual property protection. Students, researchers, and faculty members are encouraged to develop innovative solutions, file patents, and translate research into societal and industrial applications. The University also promotes entrepreneurship among women, rural youth, and aspiring innovators through training programmes, workshops, and collaborations with government and industry partners.

The University's faculty members actively engage in high-quality research across science, engineering, social sciences, management, humanities, and interdisciplinary domains. Research outputs are regularly published in reputed national and international journals indexed in leading databases such as Scopus and Web of Science. DBRAU also encourages patent

filing, technology development, funded research projects, consultancy activities, and industry-sponsored research through its dedicated research and innovation support mechanisms.

DBRAU provides modern academic and research infrastructure across its constituent institutes and departments. The University campus houses well-equipped laboratories, computer centres, libraries with extensive digital resources, smart classrooms, seminar halls, innovation spaces, and research facilities that support teaching, learning, and innovation. Information and Communication Technology (ICT)-enabled education, high-speed internet connectivity, digital library services, and e-governance systems enhance academic productivity and collaborative research.

Committed to sustainable infrastructure development, the University continuously upgrades its physical and digital infrastructure while promoting environmentally responsible practices. Green campus initiatives, energy-efficient infrastructure, water conservation measures, waste management practices, renewable energy adoption, and sustainable resource utilisation contribute to creating a resilient and environmentally conscious campus. Through these initiatives, Dr. Bhimrao Ambedkar University, Agra, continues to strengthen its role as a leading public university dedicated to advancing innovation, industry collaboration, research excellence, and sustainable infrastructure in alignment with Sustainable Development Goal 9.

9.1 RESEARCH ON INDUSTRY, INNOVATION AND INFRASTRUCTURE

Dr. Bhimrao Ambedkar University (DBRAU), Agra actively promotes research and innovation that contribute to sustainable industrial development, technological advancement, and resilient infrastructure. As a multidisciplinary public university, DBRAU fosters collaborative research across engineering, science, computer applications, management, social sciences, environmental sciences, and allied disciplines to develop practical solutions that address regional, national, and global challenges.

Infrastructure Development and Industrial Modernisation

Research at DBRAU focuses on advancing technologies that improve industrial productivity, digital transformation, sustainable manufacturing, and infrastructure development. Faculty

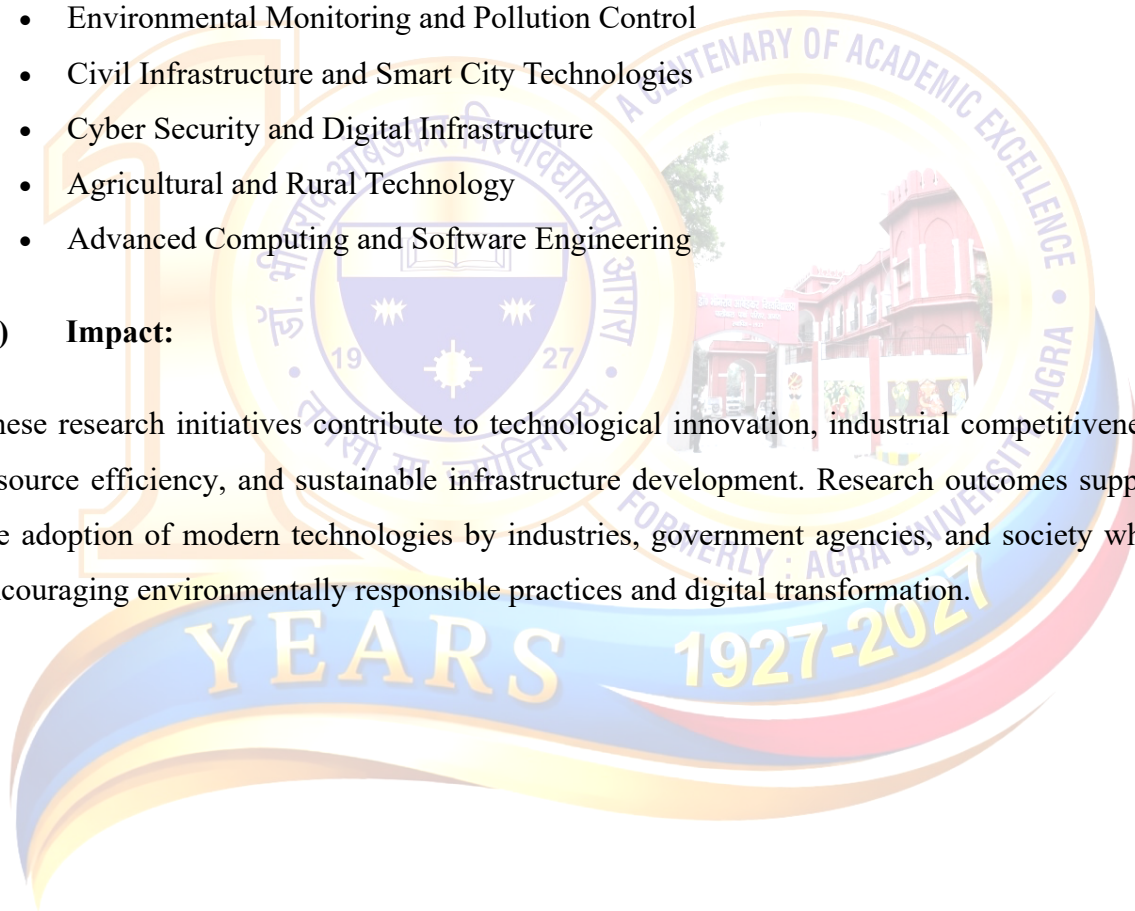
members and research scholars undertake interdisciplinary research aimed at addressing societal and industrial needs while promoting sustainable economic growth.

(i) Key Research Areas:

- Artificial Intelligence, Machine Learning, and Data Science
- Internet of Things (IoT) and Smart Systems
- Sustainable Materials and Green Technologies
- Renewable Energy and Energy Efficiency
- Environmental Monitoring and Pollution Control
- Civil Infrastructure and Smart City Technologies
- Cyber Security and Digital Infrastructure
- Agricultural and Rural Technology
- Advanced Computing and Software Engineering

(ii) Impact:

These research initiatives contribute to technological innovation, industrial competitiveness, resource efficiency, and sustainable infrastructure development. Research outcomes support the adoption of modern technologies by industries, government agencies, and society while encouraging environmentally responsible practices and digital transformation.

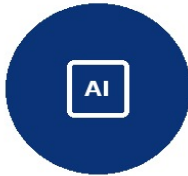




**DR. BHIMRAO
AMBEDKAR
UNIVERSITY, AGRA**
(A State University of Uttar Pradesh)
तमसो मा ज्योतिर्गमय

INFRASTRUCTURE DEVELOPMENT & INDUSTRIAL MODERNISATION

Indicator: Research that advances industrial productivity, digital transformation and sustainable infrastructure.



OUR COMMITMENT

DBRAU promotes interdisciplinary research to modernise industry, strengthen digital systems and create resource-efficient infrastructure for sustainable economic growth.

KEY FOCUS AREAS



01 EMERGING TECHNOLOGIES

AI, Machine Learning, Data Science and IoT support intelligent industrial and public systems.



02 GREEN TECHNOLOGIES

Sustainable materials, renewable energy and efficiency reduce resource consumption.



03 SMART INFRASTRUCTURE

Smart cities, cyber security and digital networks strengthen resilient services.



04 RURAL & AGRICULTURAL TECHNOLOGY

Practical technologies improve agriculture, livelihoods and regional development.



05 INDUSTRIAL IMPACT

Research improves innovation, competitiveness and sustainable modernisation.



CONTRIBUTION TO SDG 9

These coordinated actions strengthen industry, promote innovation and develop resilient, inclusive and sustainable infrastructure.

9 INDUSTRY,
INNOVATION
AND
INFRASTRUCTURE

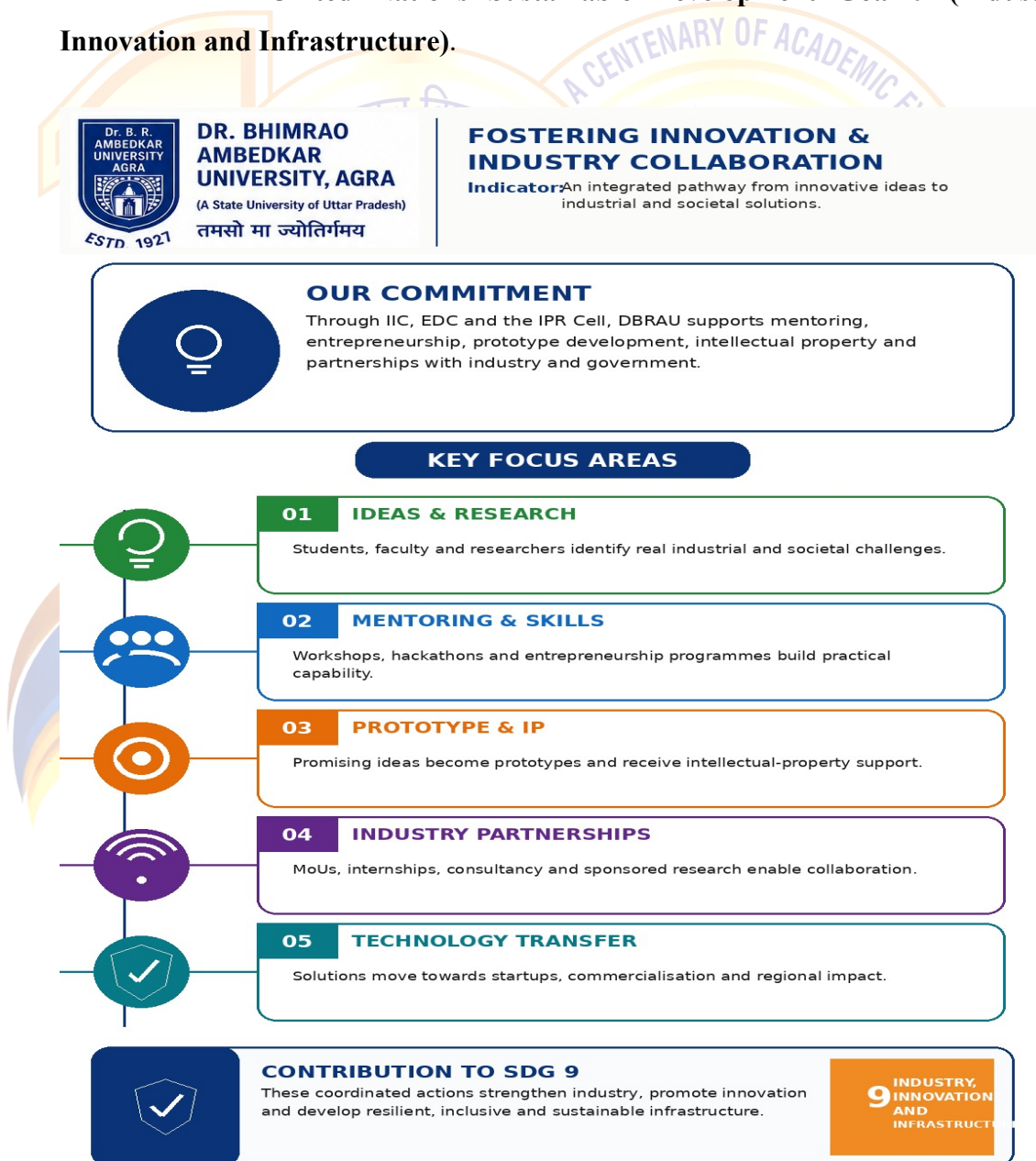
Fostering Innovation and Industry Collaboration

Dr. Bhimrao Ambedkar University (DBRAU), Agra has established a robust innovation ecosystem through its **Institution's Innovation Council (IIC)**, **Entrepreneurship Development Cell (EDC)**, **Intellectual Property Rights (IPR) Cell**, and innovation and startup support initiatives. These platforms promote research excellence, entrepreneurship, and industry engagement while encouraging students, faculty members, and researchers to transform innovative ideas into practical technologies and societal solutions.

- **Innovation and Technology Support:** DBRAU promotes innovation by encouraging faculty members, researchers, and students to undertake interdisciplinary and industry-oriented research, develop innovative technologies, file patents, and participate in innovation and entrepreneurship programmes. The University supports the translation of research into practical applications through mentoring, design thinking workshops, capacity-building programmes, startup awareness initiatives, hackathons, innovation challenges, technology exhibitions, and technology-driven projects.
- **Entrepreneurship Development:** The University regularly organises Entrepreneurship Development Programmes (EDPs), expert lectures, startup mentoring sessions, business model development workshops, and skill enhancement programmes. These initiatives help aspiring entrepreneurs develop entrepreneurial competencies, transform innovative ideas into viable ventures, and contribute to regional economic development.
- **Industry Collaboration and Partnerships:** DBRAU actively collaborates with industries, government organisations, research institutions, and academic partners through Memoranda of Understanding (MoUs), sponsored research projects, consultancy assignments, internships, industrial training programmes, expert lectures, and collaborative research initiatives. These partnerships promote knowledge exchange, technology transfer, prototype development, process innovation, and capacity building while addressing emerging industrial and societal challenges.
- **Research Commercialisation and Intellectual Property:** Through its Intellectual Property Rights (IPR) Cell, the University creates awareness about patents, copyrights, trademarks, and technology commercialisation. Faculty members and researchers

receive guidance and support for protecting intellectual property, promoting innovation, and facilitating the transfer of research outcomes into practical applications.

- **Societal and Industrial Impact:** By integrating research, innovation, entrepreneurship, and industry collaboration, DBRAU facilitates the development of industry-oriented technologies, strengthens research excellence, promotes startup culture, and encourages sustainable technological solutions. These collaborative efforts contribute to industrial modernisation, sustainable infrastructure development, inclusive innovation, and regional economic growth, reinforcing the University's commitment to **United Nations Sustainable Development Goal 9 (Industry, Innovation and Infrastructure)**.



Enhancing Access to Services for Underserved Areas

Dr. Bhimrao Ambedkar University (DBRAU), Agra is committed to ensuring equitable access to education, technology, innovation, and essential services, particularly for rural, underserved, and economically disadvantaged communities. Through research, outreach programmes, and technology-driven initiatives, the University develops sustainable solutions that improve the quality of life and promote inclusive development.

- **Technology for Community Development:** The University undertakes research and extension activities focused on digital technologies, smart agriculture, environmental sustainability, e-governance, and ICT-enabled services that address the needs of rural and underserved communities. These initiatives contribute to improving access to education, public services, and livelihood opportunities.
- **Digital Inclusion and Capacity Building:** DBRAU promotes digital literacy and technological empowerment through skill development programmes, workshops, awareness campaigns, and community engagement initiatives. Faculty members and students actively participate in programmes that bridge the digital divide and enhance access to modern technologies for diverse sections of society.
- **Research for Sustainable Infrastructure:** Research projects in engineering, environmental science, computer science, and allied disciplines focus on renewable energy, water conservation, waste management, sustainable infrastructure, smart technologies, and resource-efficient solutions. These efforts support resilient infrastructure and environmentally sustainable development.
- **Collaborative Outreach and Knowledge Transfer:** The University collaborates with government agencies, industries, educational institutions, and community organisations to implement research-driven solutions, technology transfer initiatives, and capacity-building programmes. These partnerships ensure that scientific knowledge and technological innovations benefit society, particularly rural and underserved populations.

Through its integrated approach to research, innovation, and community engagement, Dr. Bhimrao Ambedkar University, Agra contributes to the development of knowledge, technologies, and sustainable infrastructure that strengthen industry, promote inclusive innovation, and improve access to essential services. These initiatives support equitable socio-

economic development and reinforce the University's commitment to the **United Nations Sustainable Development Goal 9 (Industry, Innovation and Infrastructure)**.



Research and Innovation Facilities at Dr. Bhimrao Ambedkar University, Agra

Dr. Bhimrao Ambedkar University (DBRAU), Agra has established a comprehensive research and innovation ecosystem that strengthens scientific research, technological advancement, and interdisciplinary collaboration. The University continuously enhances its academic and research infrastructure to foster innovation, entrepreneurship, and industry-oriented research, contributing towards sustainable development and national progress. Its commitment to research excellence is reflected through modern laboratories, innovation platforms, digital infrastructure, and research support mechanisms across various disciplines.



**DR. BHIMRAO
AMBEDKAR
UNIVERSITY, AGRA**
(A State University of Uttar Pradesh)
तमसो मा ज्योतिर्गमय

RESEARCH & INNOVATION FACILITIES AT DBRAU

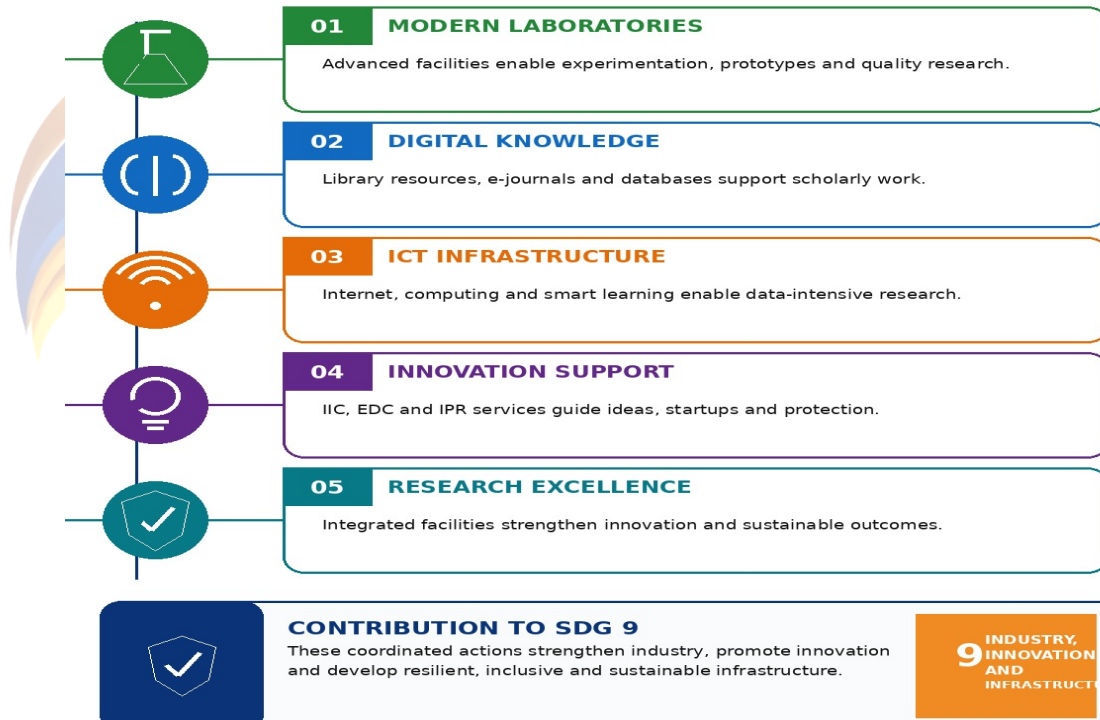
Indicator: A connected institutional ecosystem for teaching, research and innovation.



OUR COMMITMENT

Modern laboratories, digital knowledge resources, ICT facilities and innovation support enable interdisciplinary research and industry-oriented technological development.

KEY FOCUS AREAS



Advanced Research Centres and Infrastructure

Dr. Bhimrao Ambedkar University (DBRAU), Agra has established a comprehensive research ecosystem comprising advanced laboratories, digital infrastructure, innovation centres, and industry partnerships to promote cutting-edge research, technological advancement, and interdisciplinary collaboration. The University provides state-of-the-art facilities that enable faculty members, researchers, and students to undertake high-quality research addressing national priorities and global challenges.

Advanced Research Laboratories: The University maintains well-equipped laboratories across Engineering, Computer Science, Electronics, Physics, Chemistry, Biotechnology, Environmental Science, Mathematics, and Life Sciences. These facilities support teaching, experimentation, interdisciplinary research, prototype development, and innovation, while encouraging scientific inquiry and technology-driven solutions.

Artificial Intelligence and Emerging Technologies: DBRAU has developed research facilities dedicated to emerging technologies, including Artificial Intelligence (AI), Machine Learning (ML), Deep Learning, Data Science, Internet of Things (IoT), Cyber Security, Cloud Computing, Software Engineering, Blockchain, and Advanced Computing. These laboratories enable researchers and students to design intelligent systems, develop innovative applications, and address complex industrial and societal challenges.

Central Library and Digital Knowledge Resources: The University houses a modern Central Library equipped with an extensive collection of printed books, e-books, e-journals, online databases, institutional repositories, and digital learning resources. ICT-enabled library services provide seamless access to scholarly information, facilitating research excellence, academic collaboration, and lifelong learning.

Information and Communication Technology (ICT) Infrastructure: DBRAU offers robust ICT infrastructure comprising high-speed internet connectivity, smart classrooms, advanced computer centres, licensed software, virtual learning platforms, cloud-based services, and digital research tools. These facilities support data-intensive research, collaborative learning, computational analysis, and technology-enabled education.

Innovation and Entrepreneurship Ecosystem: The University actively nurtures innovation and entrepreneurship through its Institution's Innovation Council (IIC), Entrepreneurship Development Cell (EDC), Intellectual Property Rights (IPR) Cell, and startup promotion initiatives. Faculty members and students receive mentoring, incubation support, innovation challenge opportunities, hackathons, entrepreneurship development programmes, patent facilitation, and technology commercialisation assistance, fostering an innovation-driven academic culture.

Research and Intellectual Property Support: DBRAU encourages faculty members and research scholars to undertake externally funded research projects, consultancy assignments, interdisciplinary research, patent filing, copyright registration, and technology transfer activities. The University's IPR Cell promotes awareness, protection, and commercialisation of intellectual property, thereby strengthening research output and innovation capabilities.

Industry–Academia Collaboration: The University maintains strong collaborations with industries, government organisations, research institutions, and academic partners through Memoranda of Understanding (MoUs), sponsored research projects, consultancy, internships, industrial visits, expert lectures, faculty exchange, and collaborative research programmes. These partnerships facilitate knowledge transfer, prototype development, skill enhancement, and industry-relevant research.

Specialised Research Laboratories: Dr. Bhimrao Ambedkar University (DBRAU), Agra has established specialised research laboratories to promote interdisciplinary research, innovation, and technology development.

- i. **Artificial Intelligence and Machine Learning Laboratory:** Research in AI, ML, Deep Learning, NLP, Computer Vision, Data Analytics, and Intelligent Systems.
- ii. **Internet of Things (IoT) and Embedded Systems Laboratory:** Focuses on IoT, embedded systems, sensor networks, robotics, automation, and smart infrastructure.
- iii. **Cyber Security and Advanced Computing Laboratory:** Supports research in cyber security, cryptography, cloud computing, blockchain, digital forensics, and secure computing.

- iv. **Environmental Science and Sustainable Development Laboratories:** Promote research in environmental monitoring, renewable energy, climate resilience, water resources, and waste management.
- v. **Basic and Applied Science Laboratories:** Provide advanced facilities for research in Physics, Chemistry, Biotechnology, Mathematics, and Life Sciences.
- vi. **Engineering and Technology Laboratories:** Support teaching and research in Computer Science, Software Engineering, Data Science, Cloud Computing, AI, IoT, Electronics, Communication Systems, and other emerging technologies.

Through its advanced research infrastructure, digital ecosystem, innovation centres, specialised laboratories, and strong industry partnerships, Dr. Bhimrao Ambedkar University, Agra continues to strengthen research excellence, technological innovation, entrepreneurship, and sustainable infrastructure development. These initiatives significantly contribute to the achievement of **United Nations Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure** by promoting research-led innovation, enhancing technological capabilities, fostering industry–academia collaboration, and developing sustainable solutions that benefit society and support national development.

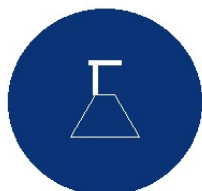




**DR. BHIMRAO
AMBEDKAR
UNIVERSITY, AGRA**
(A State University of Uttar Pradesh)
तमसो मा ज्योतिर्गमय

ADVANCED RESEARCH CENTRES & INFRASTRUCTURE

Indicator Specialised facilities supporting national priorities and global challenges.



OUR COMMITMENT

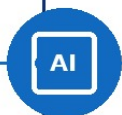
DBRAU provides advanced laboratories, computing facilities, knowledge resources and research-support mechanisms for high-quality interdisciplinary and industry-relevant research.

KEY FOCUS AREAS



01 SPECIALISED LABORATORIES

Science, engineering and technology laboratories support advanced inquiry.



02 ADVANCED COMPUTING

AI, IoT, cloud and cyber-security facilities drive emerging research.



03 KNOWLEDGE RESOURCES

Digital library, smart classrooms and tools expand academic access.



04 RESEARCH & IPR SUPPORT

Funding, patents, consultancy and transfer activities are facilitated.



05 INDUSTRY-ACADEMIA LINKS

Partnerships enable skills, prototypes and practical research outcomes.



CONTRIBUTION TO SDG 9

These coordinated actions strengthen industry, promote innovation and develop resilient, inclusive and sustainable infrastructure.

9 INDUSTRY,
INNOVATION
AND
INFRASTRUCTURE

Innovation and Entrepreneurship Ecosystem

Dr. Bhimrao Ambedkar University (DBRAU), Agra fosters a vibrant innovation and entrepreneurship ecosystem to transform research outcomes into impactful technologies, startups, and societal solutions.

- **Institution's Innovation Council (IIC):** The University promotes innovation through the Institution's Innovation Council by organising innovation challenges, hackathons, workshops, expert lectures, startup awareness programmes, and capacity-building activities that encourage creativity, problem-solving, and entrepreneurial thinking among students and faculty.
- **Entrepreneurship Development Cell (EDC):** The EDC provides mentoring, entrepreneurship training, business development support, industry interaction, and startup guidance, enabling students and researchers to convert innovative ideas into sustainable enterprises.
- **Intellectual Property Rights (IPR) Cell:** The IPR Cell promotes awareness of intellectual property, facilitates patent filing, copyright registration, technology transfer, and innovation protection, encouraging research commercialisation and knowledge creation.
- **Research, Innovation and Startup Support:** The University encourages interdisciplinary research, prototype development, proof-of-concept projects, consultancy, incubation support, and collaboration with industry and government organisations. Faculty members and students are supported in securing externally funded projects, promoting translational research, and developing technology-driven solutions for societal and industrial needs.

Collaboration and Capacity Building

Dr. Bhimrao Ambedkar University (DBRAU), Agra actively strengthens its research ecosystem through strategic collaborations, institutional governance, and continuous capacity-building initiatives.

- **Research Collaborations and Partnerships:** The University collaborates with industries, government organisations, research institutions, and academic partners through Memoranda of Understanding (MoUs), sponsored research projects,

consultancy, internships, industrial visits, expert lectures, faculty exchange programmes, and collaborative research initiatives. These partnerships promote knowledge exchange, innovation, technology transfer, and skill development.

- **Research Governance and Quality Assurance:** DBRAU has established institutional mechanisms to support research planning, monitoring, and quality enhancement through research committees, departmental research advisory bodies, and academic governance systems. These structures facilitate effective implementation of research policies, interdisciplinary collaboration, and continuous improvement in research outcomes.
- **Human Capital Development:** The University regularly organises faculty development programmes, research methodology workshops, seminars, conferences, hands-on training, and skill development programmes in emerging technologies, statistical tools, and research ethics. Research and innovation are promoted across all academic levels to develop a strong culture of scientific inquiry and lifelong learning.





**DR. BHIMRAO
AMBEDKAR
UNIVERSITY, AGRA**
(A State University of Uttar Pradesh)
तमसो मा ज्योतिर्गमय

INNOVATION & ENTREPRENEURSHIP ECOSYSTEM

Indicator: Transforming research and creative ideas into startups and societal value.



OUR COMMITMENT

DBRAU nurtures innovation through challenges, mentoring, prototype development, IP protection, incubation support and collaboration with industry and government organisations.

KEY FOCUS AREAS



01 CREATIVE IDEAS

Challenges, expert sessions and hackathons encourage problem-solving.



02 MENTORING

IIC and EDC build entrepreneurial, technical and business capability.



03 PROOF OF CONCEPT

Ideas progress through research, prototyping and validation.



04 IP & INCUBATION

Protection and incubation prepare innovations for practical adoption.



05 STARTUP & IMPACT

Commercialisation creates enterprises, jobs and societal solutions.



CONTRIBUTION TO SDG 9

These coordinated actions strengthen industry, promote innovation and develop resilient, inclusive and sustainable infrastructure.

9 INDUSTRY,
INNOVATION
AND
INFRASTRUCTURE

9.1.1 Industry, Innovation and Infrastructure: Research Publications

Dr. Bhimrao Ambedkar University (DBRAU), Agra actively contributes to **United Nations Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure** through high-quality research publications that promote industrial development, technological innovation, digital transformation, and sustainable infrastructure. The University's multidisciplinary research ecosystem encourages faculty members, researchers, and students to undertake collaborative, interdisciplinary, and application-oriented research addressing regional, national, and global challenges.

Focus and Scope of Research Publications

Faculty members and research scholars at Dr. Bhimrao Ambedkar University (DBRAU), Agra contribute to knowledge creation through publications in reputed national and international peer-reviewed journals across Engineering, Computer Science, Basic Sciences, Environmental Science, Biotechnology, Management, and interdisciplinary research domains. The research publications focus on innovation-driven solutions, emerging technologies, sustainable practices, and industry-oriented applications that support economic development and societal advancement.

i. Digital Transformation, Artificial Intelligence, and Industry 4.0 Integration

This research theme focuses on leveraging advanced computing, artificial intelligence, and digital technologies to enhance industrial efficiency, automation, and decision-making.

Key Focus Areas:

- **Smart Systems and IoT:** Development of IoT-enabled systems, wireless sensor networks, embedded technologies, and real-time monitoring solutions for agriculture, logistics, healthcare, and infrastructure.
- **AI and Data Analytics:** Applications of Artificial Intelligence, Machine Learning, and data-driven models for predictive analytics, smart manufacturing, supply chain optimisation, healthcare solutions, and intelligent decision support systems.

- **Advanced Computing and Networking:** Research in 5G technologies, blockchain applications, cyber-physical systems, cloud computing, and secure digital infrastructure for Industry 4.0.
- **Digital Transformation in Management:** Studies on technology-enabled organisational innovation, HR 4.0, digital workplace transformation, talent management, and entrepreneurship.

ii. Sustainable Industrial Processes and Circular Economy

This research area focuses on developing environmentally sustainable industrial processes through waste valorisation, resource recovery, and green technologies.

Key Focus Areas:

- **Circular Economy and Waste-to-Value:** Research on converting industrial, agricultural, and biological waste into valuable products, including biofuels, energy resources, sustainable materials, and industrially useful compounds.
- **Green Chemistry and Sustainable Materials:** Studies on eco-friendly processing techniques, sustainable material development, green modification approaches, and reduction of environmental impact in industrial processes.
- **Food Processing and Sustainability:** Research on food quality assessment, food safety technologies, sustainable processing methods, decontamination techniques, and innovative approaches for improving food security.

iii. Resilient Infrastructure and Environmental Biotechnology

This research theme addresses sustainable infrastructure development through environmental protection, advanced materials, and biotechnology-based solutions.

Key Focus Areas:

- **Wastewater Treatment and Bioremediation:** Research on microbial technologies, microbial fuel cells, biosurfactants, constructed wetlands, and biological treatment methods for sustainable water management.
- **Environmental Remediation:** Studies on microbial approaches for heavy metal removal, pollutant degradation, and restoration of contaminated environments.

- **Advanced Materials and Manufacturing:** Research on material characterisation, manufacturing processes, modelling, and optimisation of engineering materials for industrial applications.
- **Smart and Green Infrastructure:** Studies on smart city solutions, sustainable urban development, circular economy integration, climate-resilient infrastructure, and sustainable water systems.

COMMITMENT TO KNOWLEDGE CREATION

Dr. Bhimrao Ambedkar University (DBRAU), Agra demonstrates a strong commitment to knowledge creation through its growing research publications in emerging technologies, sustainable development, industrial innovation, and infrastructure advancement. The University continues to enhance its research capabilities through faculty development programmes, externally funded research projects, innovation initiatives, and collaborations with industries and research organisations.

These efforts promote impactful, future-oriented research and contribute to scientific advancement, technological innovation, and sustainable solutions addressing societal and industrial challenges. Through its research publications and collaborative ecosystem, DBRAU continues to strengthen its contribution towards **United Nations Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure.**

Scopus-Indexed Research Publications:

DBRAU faculty members and researchers actively contribute to Scopus-indexed publications across multidisciplinary domains, reflecting the University's commitment to research excellence and global knowledge creation.

S.No	Paper Title	Authors	Journal /Book /Conference Name
1.	Intelligent Optimization of Fractional and Non-Linear PID Controllers for Trajectory Tracking of a 3-Link Robotic Manipulator	Ankita Maheshwari, Alka Agrawal, Vishal Goyal	2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT 2024)

2.	Fundamentals of Processing and Characterization of Polysaccharide Nanocrystal-Based Materials	Neeru Dabas, Gautam Jaiswar	Innovation in Nanopolysaccharides for Eco-sustainability: From Science to Industrial Applications (Book Chapter)
3.	Deep Neural Network Based Cyber Intrusion Detection System	Shweta Lavaniya, Sandeep Kumar Jain	Proceedings of the 3rd International Conference on Disruptive Technologies (ICDT 2025)
4.	Black Hole Detection and Prevention Using Digital Signature and SEP in MANET	Sunil Gupta, Mohammad Shahid, Ankur Goyal, Rakesh Kumar Saxena, Kamal Saluja	International Conference on Emerging Trends in Engineering and Technology (ICETET 2022)
5.	Prediction of Melting Curves of Ionic and Partially Covalent Compounds Using the Jeanloz Equation for the Grüneisen Parameter	K. Sunil, P.K. Singh, Dharmendra Kumar	Applied Physics A: Materials Science and Processing
6.	Panlingua-KMI MT System for Similar Language Translation Task at WMT 2019	Atul Kr. Ojha, Ritesh Kumar, Akanksha Bansal, Priya Rani	Proceedings of the 4th Conference on Machine Translation (WMT 2019)
7.	KMI-Coling at SemEval-2019 Task 6: Exploring N-grams for Offensive Language Detection	Priya Rani, Atul Kr. Ojha	Proceedings of the 13th International Workshop on Semantic Evaluation (SemEval 2019)
8.	Volume Thermal Expansivity for Diatomic Ionic Solids at High Pressures and High Temperatures	Kanhaiyalal, Digpratap S.	Computational Condensed Matter
9.	Light Coupling to Waveguides via Angularly Tuned Photonic Nanojet	P.K. Kushwaha, K.Y. Singh, H.S. Mahor, P.K. Singh	Optics Communications
10.	Nanomaterials for Nanoionics Applications: Synthesis, Characterization and Device Integration	A. Amita, A.S. Mathur, B.P. Singh	Nanoionics: Fundamentals and Applications (Book Chapter)
11.	Smart Materials for Sustained and Controlled Drug Release	Shivangi Sharma, Neeru Dabas, Deepa Sharma, Mohit Kumar, Sanjay Kumar Kataria, Gautam Jaiswar	Smart Micro-and Nanomaterials for Pharmaceutical Applications (Book Chapter)

12.	Study the Comparative Behavior of Different Materials under Explosive Conditions	Swati Singh, Ramvir Singh Chauhan, Inderpal Singh Sandhu, Prince Sharma	Materials Today: Proceedings
13.	Photovoltaic Thermal Air Collectors: Recent Advances in Performance Enhancement and Solar Thermal Applications (Review)	S. Gardner, L.M. Thomas, B.P. Singh, B.S. Gardner	Thermal Engineering
14.	Partial Pressure Assisted Growth of Single-Layer Graphene Grown by Low-Pressure Chemical Vapor Deposition: Implications for High-Performance Graphene FET Devices	Indu Sharma, Girija Shankar Papanai, Sharon Jyotika Paul, Bipin Kumar Gupta	ACS Omega
15.	Performance Optimization Study of Lead-Free CsSnGeI ₃ Based Perovskite Solar Cell Heterostructure with Different Inorganic Electron Transport Layers: A Numerical Simulation Approach	Neha Kumari, Rahutosh Ranjan, Nitin Srivastava, Rajanish Nath Tiwari, Arvind Kumar Sharma, Neelabh Srivastava	Journal of Physics and Chemistry of Solids
16.	Analysis of Melting Behavior of Some Transition Metals at High Pressures	K. Sunil, M.P. Singh, B.S. Sharma	Computational Condensed Matter
17.	Load Balancing Techniques in Fog and Edge Computing: Issues and Challenges	Deepak, Manoj Kumar Upadhyay, Mahfooz Alam	Proceedings of the International Conference on Computing, Power, and Communication Technologies (IC2PCT 2024)
18.	Implementing RNN with Non-Randomized GA for the Storage of Static Image Patterns	Raj Kumar Goel, Ganesh Kumar Dixit, Saurabh Shrivastava, Manu Pratap Singh, Shweta Vishnoi	International Journal on Electrical Engineering and Informatics
19.	How Much Data in Low-resource Indian Languages is "Sufficient" for Transfer Learning: A Comparative Study for POS Annotation	Mohit Raj, Ritesh Kumar	ACM Transactions on Asian and Low-Resource Language Information Processing
20.	Evaluations of Thermal and Antibacterial Properties of Nanocomposites of Functionalized Poly(Methyl Methacrylate) with Different Amino Containing Groups	Hari Madhav, Paramjit Singh, Neetika Singh, Gautam Jaiswar	Macromolecular Research
21.	Development of nano CaAl _x Fe _{12-x} O ₁₉ ferrites doped	Kanhaiyalal, Digpratap S.	AIP Conference Proceedings

	with Al ³⁺ using microwave assisted autocombustion method		
22.	A Multilingual Dataset (MultiMWP) and Benchmark for Math Word Problem Generation	Omega Gamage, Surangika Ranathunga, Annie Lee, Xiao Sun, Aryaveer Singh, et al.	IEEE Transactions on Audio, Speech and Language Processing
23.	Bulk modulus of second-order pressure derivative for nanomaterials	Rohit Gupta, Mohit Gupta	Bulletin of Materials Science
24.	The composition of polysaccharides: Monosaccharides and binding, group decorating, polysaccharides chains	Shivani Chaudhary, Vijay Prakash Jain, Gautam Jaiswar	Innovation in Nano-polysaccharides for Eco-sustainability: From Science to Industrial Applications (Book Chapter)
25.	Analysis of Anderson–Grüneisen parameter for alkali halides at high pressure and temperature	Kanhaiyalal, Digpratap S.	Computational Condensed Matter
26.	Engraved rectangular Ni ₃ Fe ₄ (PO ₄) ₆ microrods on MWCNTs: A promising electrode architecture for scalable Supercapacitive devices	Tushar B. Deshmukh, Shilpa Pande, Mayur Thosare, Akanksha Agarwal, Suraj R. Sankapal, Babasaheb R. Sankapal	Diamond and Related Materials
27.	Enhancing radical scavenging using reduced graphene oxide based metal organic frameworks: A comparative study	Sugandha, Mamta Kushwah, Vinay Kumar, Antresh Kumar, Meenakshi Choudhary, M.S. Gaur, Kavita Arora	Journal of Molecular Structure
28.	Recent advances on semiconducting nanomaterials-ferroelectric liquid crystals nanocomposites	Ajay Kumar, Priyam, Harikesh Meena, Jai Prakash, Ling Wang, Gautam Singh	Journal of Physics: Condensed Matter
29.	Volume derivatives of the Grüneisen parameter in the limit of infinite pressure	A. Dwivedi	Canadian Journal of Physics
30.	Device modeling of non-fullerene organic solar cell by incorporating CuSCN as a hole transport layer using SCAPS	Bharti Sharma, A.S. Mathur, V.K. Rajput, I.K. Singh, B.P. Singh	Optik
31.	Effect of the Growth Rate on the Optical and Terahertz Characteristics of Temperature Gradient Solvent Method-Grown ZnTe Single Crystals	Priyanka, Sudeep Verma, Arun Tanwar, Manish Sinha, Akhilesh Pandey,	Physica Status Solidi - Rapid Research Letters

		Keshav Deo Verma, Om Prakash Thakur	
32.	Blockchain Driven Generative AI: Ensuring Data Provenance and Model Integrity	Mahfooz Alam, Deepak, Divya Mishra, Mohammad Shahid, Maria Lapina	Lecture Notes in Networks and Systems
33.	Analysis of melting of some metals using pressure dependence of the Grüneisen parameter in the Lindemann law	D. Ashwini, Vijay S. Sharma, K. Sunil	European Physical Journal Plus
34.	Plant Disease Detection Using Imaging Sensors, Deep Learning and Machine Learning for Smart Farming	Chanchal Upadhyay, Hemant K. Upadhyay, Sapna Juneja, Abhinav Juneja	Healthcare Solutions Using Machine Learning and Informatics
35.	Integrated Quantum Chemical and Pharmacokinetic Profiling of 2-Phenylbenzo[d]thiazole: A Multiscale Perspective on Structure and Bioactivity	Abhishek Kumar, Saleem Javed, Sandeep Kumar Singh, Manoj Kumar, Sonu Kumar	ChemistrySelect
36.	Plasma-assisted TiO ₂ Nanocoated ISFET Sensors for Enhanced DNA Amplification Detection	Ravish Sharma, Yogita Sharma, Chahak Bansal	Microchemical Journal
37.	Ecofriendly Nanomaterials for Wastewater Treatment	Neeru Dabas, Shivani Chaudhary, Ritu Rani Chaudhary, Gautam Jaiswar	Green Synthesis of Nanomaterials: Biological and Environmental Applications
38.	Effect of laser beam propagation through the plasmonic nanoparticles suspension	Avesh Kumar, Ajay Taneja, T. Mohanty, R.P. Singh	Results in Optics
39.	Study of band structures of GaAs and InAs grown on different substrates	Akhilesh Kumar, Sandhya Kattayat, H.K. Sublania, Jasgurpreet Singh, K.P. Tewari, P.A. Alvi	Journal of Mines, Metals and Fuels
40.	An intelligent adaptive Virtual Machine migration and allocation in Cloud Data Centers	Vijay Bhadouria, Sandeep Kumar Jain	Journal of Integrated Science and Technology
41.	Crystallographic capture of caged diamondoids: Camphor and adamantanes' guests-encapsulation on specific recognition-sites of host MOF	Pratibha Chauhan, Saleem Javed	Journal of Molecular Structure
42.	Attention Based Swin Convolutional Transformer for Fingerprint Recognition	Reena Garg, Pooja Pathak, M.P. Singh	2025 7th International Conference on Information Systems

			and Computer Networks (ISCON 2025)
43.	A case study on the classification of brain tumour by deep learning using convolutional neural network	Sunil Gupta, Rakesh Saxena, Ankit Bansal, Kamal Saluja, Amit Vajpayee, Shikha	AIP Conference Proceedings
44.	Topological and DFT studies of 8-hydroxyquinoline derivative and its copper complex having supramolecular interactions network	Arif Ali, Abdullah Alarifi, Mohammad Jane Alam, Shabbir Ahmad, Mohd Afzal, Saleem Javed, Musheer Ahmad, Nayim Sepay	Computational and Theoretical Chemistry
45.	A comment on the paper “A method of calculating volume dependence of second and third order Grüneisen parameters for MgO”	K. Anand, M.P. Singh	Physica B: Condensed Matter
46.	Performance Analysis of Convolutional Neural Networks with Different Optimizers and Hybrid Pooling Methods for Sound Classification	Rashmi P., Singh M.P.	International Journal of Advances in Soft Computing and its Applications
47.	Synthesis and thermal analysis of phosphonitrile-core-bearing aromatic nitriles for high-temperature applications	Pandey M.K., Khan A.R., Saxena A.K.	Journal of Thermal Analysis and Calorimetry
48.	Engineering Air Quality Solutions: Measurement, Control, and Infrastructure Innovations	Gautam S., Taneja A.	Engineering Air Quality Solutions: Measurement, Control, and Infrastructure Innovations (Book)
49.	Analysis of Goyal-Gupta Equation of State for Ge (49nm) nanomaterial	Dwivedi A.	High Temperatures - High Pressures
50.	Analysis of thermoelastic properties of alkali halide crystals at high temperatures	Sharma J., Sharma B.S.	Computational Condensed Matter
51.	Edge Computing: Architecture, Application, Opportunities, and Challenges	Deepak, Upadhyay M.K., Alam M.	Proceedings - International Conference on Technological Advancements in Computational Sciences (ICTACS 2023)
52.	AI Tools for Writing and Editing in Academia and Research	Lavania S., Verma A.K., Basuel R.B.	Leveraging AI for Future-Ready

			Writing Education (Book Chapter)
53.	Performance of Graphene Oxide Hydrogel Functionalized with Chitosan and Polyvinyl Alcohol for Enhanced Antibacterial Activities	Jain V.P., Jaiswar G.	Chemistry Africa
54.	Probing the electrical and dielectric properties of polyaniline multi-walled carbon nanotubes nanocomposites doped in different protonic acids	Paul S.J., Gupta B.K., Chandra P.	Polymer Bulletin
55.	Full-Duplex Communications: Performance in Ultradense mm-Wave Small-Cell Wireless Networks	Yadav A., Tsiropoulos G.I., Dobre O.A.	IEEE Vehicular Technology Magazine
56.	Industry-Driven Approach for ANFIS-Based Intelligent Control Suspension System with MR Damper for Enhanced Ride Quality in Passenger Rail Vehicles for Technological Investigations	Sharma S.K., Sharma R.C., Lavania S., Palli S., Avesh M.	National Academy Science Letters
57.	Electronic, Structural and Optical Properties of Magnesium Based Perovskite Chalcogenides [MgZrS ₃]	Upadhyay A., Dubey P., Pandit N., Dubey A., Bhardwaj S., Verma A.S.	Springer Proceedings in Physics
58.	Pattern Classifications Using Grover's and Ventura's Algorithms in a Two-qubits System	Singh M.P., Radhey K., Rajput B.S.	International Journal of Theoretical Physics
59.	Role of absorber and buffer layer thickness on Cu ₂ O/TiO ₂ heterojunction solar cells	Mathur A.S., Singh P.P., Upadhyay S., Yadav N., Singh K.S., Singh D., Singh B.P.	Solar Energy
60.	Tailoring photovoltaic properties through As ₂ O ₃ and GaN doping in silicon monoxide	Singh S., Jain V.P., Singh V.K., Jaiswar G.	Journal of Materials Science: Materials in Electronics
61.	Study of effect of defects on CdS/CdTe heterojunction solar cell	Mathur A.S., Singh B.P.	Optik
62.	Two phase learning technique in modular neural network for pattern classification of handwritten Hindi alphabets	Singh M.P., Singh G.	Machine Learning with Applications
63.	Full-Duplex Communications: Performance in Ultradense mm-Wave Small-Cell Wireless Networks	Yadav A., Tsiropoulos G.I., Dobre O.A.	IEEE Vehicular Technology Magazine
64.	Probing the electrical and dielectric properties of polyaniline multi-walled carbon nanotubes	Paul S.J., Gupta B.K., Chandra P.	Polymer Bulletin

	nanocomposites doped in different protonic acids		
65.	A technical review of the thermocatalytic conversion of plastic wastes for energy production and its environmental effects	Tiwari R., Rajouriya K., Botle A., Singh P.P., Taneja A.	Journal of the Iranian Chemical Society
66.	Data-driven Engineering Approaches to Air Pollution Control: Insights from PM2.5 Seasonal Trends, Trace Elements, and Health Impact Assessment-A Case Study	Singh S., Kumar V., Shikha, Yadav M., Sharma A.	Engineering Air Quality Solutions: Measurement, Control, and Infrastructure Innovations (Book Chapter)
67.	Fabrication of Micro-Patterned Chip with Controlled Thickness for High-Throughput Cryogenic Electron Microscopy	Kang M.-H., Lee M., Kang S., Park J.	Journal of Visualized Experiments
68.	Computation of Optical Response of GaAsSb/InGaAs based Photo Detector	Singh B., Kattayat S., Singh C., Alvi P.A.	Journal of Mines, Metals and Fuels
69.	A reinterpretation of the results for melting curves of metals based on the force–Heat equivalence energy density principle	Sunil K., Rekha S., Pushpendra S., Sharma B.S.	Computational Condensed Matter
70.	Analysis of thermoelastic properties of NaF and MgO at high pressures and high temperatures	Rashmi V., Dwivedi A.	High Temperatures - High Pressures
71.	Higher order derivatives of bulk modulus of materials at infinite pressure	Dwivedi A.	Canadian Journal of Physics
72.	Fingerprint recognition using convolution neural network with inversion and augmented techniques	Garg R., Singh G., Singh A., Singh M.P.	Systems and Soft Computing
73.	Simulation Study of the Photovoltaic Performance of WS ₂ Based Transition Metal Dichalcogenide Solar Cell	Mathur A.S., Singh B.P.	Applied Solar Energy
74.	Incorporation of Carbon Nanotubes in Non-Fullerene Acceptor Organic Solar Cells: A Review	Sharma B., Singh B.P.	Applied Solar Energy
75.	Simulation of PBDB-T/ITIC-based organic solar cell using SCAPS-1D	Mathur A.S., Kumar R., Amita, Kumar A., Singh B.P.	MRS Advances
76.	Metal tellurides: Proof of concept toward current trends for high-performance supercapacitor applications	Agarwal A., Pande S.A., Sankapal B.R.	Journal of Energy Storage

77.	Multilayer feed forward neural networks for non-linear continuous bidirectional associative memory	Singh M.P., Saraswat V.K.	Applied Soft Computing Journal
78.	Multilayer Neural Network Technique for Parsing the Natural Language Sentences	Singh M.P., Chaturvedi S., Shudhalwar D.D.	Research Anthology on Applied Linguistics and Language Practices
79.	NUIG-Panlingua-KMI Hindi ↔ Marathi MT Systems for Similar Language Translation Task @ WMT 2020	Ojha A.Kr., Rani P., Bansal A., Chakravarthi B.R., Kumar R., McCrae J.P.	Conference on Machine Translation (WMT 2020) – Proceedings
80.	Feed Hopfield neural network for signature verification on banks using auto-association techniques	Singhal A., Rashmi P.	AIP Conference Proceedings
81.	Advancing Responsible, Generative, and Explainable AI: Challenges, Opportunities, and Future Directions	Alam M., Deepak, Rehman K., Ashraf Z., Pandey B., Aldasheva L.	International Conference on Emerging Technologies and Innovation for Sustainability (EmergIN 2025)
82.	Navigating the Cybersecurity Landscape in Railway Infrastructure: Measures, Challenges, and Innovation	Verma A.K., Lavania S.	Railway Engineering Technology: Developments and Innovations
83.	Lattice-Based Cryptography and Applications for Networking	Khan N., Diwakar C., Kumar V.	AIP Conference Proceedings
84.	Progress in Ventilated Walls and Double-Skin Facades for Sustainability	Mishra A., Mishra S., Tripathi S.K., Roy B., Ghosh R., Upadhyay C., Pandey S., Kumar P., Kaushik A., Chaube A.K., Singh R., Singh P.P., Mishra A.	Thermal Evaluation of Indoor Climate and Energy Storage in Buildings
85.	Progress in absorption of environmental carbon dioxide using nanoparticles and membrane technology	Jaiswar G., Dabas N., Chaudhary S., Jain V.P.	International Journal of Environmental Science and Technology
86.	Processes of Quantum Associative Memory (QuAM) Through New Maximally Entangled States (Singh-Rajput MES)	Singh, Manu Pratap; Rajput, B.S.	International Journal of Theoretical Physics
87.	Epidermal Inspired Flexible Sensor with Buckypaper/PDMS Interfaces for Multimodal and Human Motion Monitoring Applications	Paul, Sharon J.; Elizabeth, Indu; Srivastava, Shubhda; Tawale, Jai S.; Chandra, Prakash;	ACS Omega

		Barshilia, Harish C.; Gupta, Bipin K.	
88.	Startup Success Prediction Using GRU-SAM: A Big Data-Driven Financial Modeling Approach with LLM-Enhanced Insights	Gadam, Harshini; Pal, Rakesh Kumar; Desai, Tanvi A.	3rd International Conference on Data Science and Information System (ICDSIS 2025)
89.	Equation of state, thermal expansivity, and Grüneisen parameter for MgO at high temperatures and high pressures	Rekha, S.; Sunil, K.; Sharma, B.S.	High Temperatures - High Pressures
90.	Medicinal plants potential as anti-mycobacterial and mechanisms behind their active metabolites	Goyal, Urvashi; Kumar, Manish; Dayal, Deen; et al.	Plant Science Today
91.	Revisiting the atmospheric particles: Connecting lines and changing paradigms	Rohra, Himanshi; Pipal, Atar Singh; Satsangi, P.G.; Taneja, Ajay	Science of the Total Environment
92.	Plant-Derived Proteins and Their Interactions with Microorganisms: Interactions, Applications, and Innovations	Tyagi, Jaagriti; Mishra, Arti; Padhy, Ananya; et al.	Plant Molecular Farming: Revolutionizing Agriculture Through Innovation and Applications
93.	Click chemistry driven synthesis of (1-((2-chlorothiazol-5-yl)methyl)-1H-1,2,3-triazol-4-yl)methanol derivatives, in-vitro antibacterial and antiadipogenic activity evaluation: In-silico study	Verma, Nand Lal; Mishra, Shivam; Kumar, Mohit; et al.	Journal of Molecular Structure
94.	Variability of Fine Particulate Matter (PM1.0 and PM2.5) and its Oxidative Potential at Different Locations in the Northern Part of India	Tripathi, Tulika; Kale, Akshay; Anand, Madhu; Satsangi, P.G.; Taneja, Ajay	Aerosol Science and Engineering
95.	New Maximally Entangled States for Pattern-Association Through Evolutionary Processes in a Two-Qubit System	Singh, Manu Pratap; Rajput, Balwant S.	International Journal of Theoretical Physics
96.	Physicochemical characteristics of atmospheric particles in south western (Pune) region of India: Elemental size distribution, source analysis and risk assessment	Rohra, Himanshi; Kale, Akshay; Nehul, Shashikant; et al.	Atmospheric Pollution Research
97.	Principal component analysis and genetic divergence studies for yield and quality-related attributes of rice restorer lines	Tiwari, Shweta; Singh, Yogendra; Upadhyay, P.K.; Koutu, G.K.	Indian Journal of Genetics and Plant Breeding

98.	Spectroscopic, molecular structure, electronic, Hirshfeld surface, molecular docking, and thermodynamic investigations of trans-4-hydroxy-L-proline by DFT method	Fatima, Aysha; Singh, Meenakshi; Agarwal, Neha; et al.	Journal of Molecular Liquids
99.	Plant Stress Modulation Through the Deployment of Endophytes: An Empirical Sustainable Approach	Kumar, Saurabh; Kumar, Dharmendra; Lal, Kishan; et al.	Endophytes: Nurturing Crop Health and Sustainable Agriculture
100.	Thermoset, bioactive, metal-polymer composites for medical applications	Madhav, Hari; Singh, Neetika; Jaiswar, Gautam	Materials for Biomedical Engineering: Thermoset and Thermoplastic Polymers
101.	Convolution Neural Networks of Dynamically Sized Filters with Modified Stochastic Gradient Descent Optimizer for Sound Classification	Singh, Manu Pratap; Rashmi, Pratibha	Journal of Computer Science
102.	Conventionalized Politeness Structures: Empirical Evidence from Hindi/Urdu	Kumar, Ritesh	Journal of Politeness Research
103.	Interatomic distances for alkali halides at high pressure	Kanhaiyalal; Digpratap, S.	Computational Condensed Matter
104.	TWO-PHASE INCLINED MHD BLOOD FLOW IN POROUS TUMOR REGION WITH CONCENTRATION AND VOLUME FRACTION	Kumar, D.; Garvandha, M.; Kumar, S.; Deo, N.	East European Journal of Physics
105.	Employing radiation-processed carrageenan, sodium alginate, and chitosan improves physiological characteristics and production of essential oil and citral content in Cymbopogon flexuosus under heat stress	Chauhan, Akshay; Khan, M. Masroor A.; Ali, Alishah; et al.	Journal of Essential Oil-Bearing Plants
106.	Immunolocalization and seasonal variations in the expression of neurturin in ovary of freshwater catfish, Clarias batrachus during different phases of its reproductive cycle	Baghel, Shelja; Singh, Priyadarshini; Singh, Vinay Kumar; et al.	Proceedings of the Indian National Science Academy
107.	Optical and Morphological Properties of Zinc Sulfide-Strontium Chloride-Doped Polymer Nanocomposites	Singh, Shalini; Singh, Vipin Kumar; Jaiswar, Gautam	Proceedings of the National Academy of Sciences India Section B - Biological Sciences

108	AGE-BASED INVESTIGATION OF COVID-19 PREVALENCE IN ETHIOPIA USING MATHEMATICAL MODELLING	Agrawal, Himani; Singh, Atar; Shyamsunder; et al.	South East Asian Journal of Mathematics and Mathematical Sciences
109	Bio-Inspired Optimization of Fractional-Order Controllers for Enhanced Robotic Manipulator Performance	Maheshwari, Ankita; Agrawal, Alka; Goyal, Vishal	3rd International Conference on Power Electronics and Energy (ICPEE 2025)
110	Analysis of the volume dependence of Grüneisen parameter for γ -Fe ₂ O ₃ nanomaterial	Anand, K.	Computational Condensed Matter
111	Dark Tourism as a Tool for Economic Upliftment in Rural Uttarakhand	Shukla, U.N.; Rana, Tarun Kumar	The Emerald Handbook of International Dark Tourism
112	Mechanical Surface Treatments of Biomaterials	Chaudhary, Shivani; Jaiswar, Gautam	Surface Engineering of Biomaterials Synthesis and Processing Techniques
113	Leprosy drug resistance: a review	Naaz, Farah; Chauhan, Devendra Singh; Zeeshan, Mohd; et al.	Host Adaptation, Virulence, and Evolution: Microbial Genomics
114	Surfactant decorated polypyrrole-carbon materials composites electrodes for supercapacitor	Preetam Bhardwaj, Shalu Singh, Poonam R. Kharangarh, Andrews Nirmala Grace	Diamond and Related Materials
115	A Comparative Study of Compressible and Conductive Vertically Aligned Carbon Nanotube Forest in Different Polymer Matrixes for High-Performance Piezoresistive Force Sensors	Sharon J. Paul, Indu Sharma, Indu Elizabeth, Bhaskar Gahtori, R. Manikandan, S. Seelakumar Titus, Prakash Chandra, Bipin Kumar Gupta	ACS Applied Materials and Interfaces
116	Deadline Constrained Based Load Balancing Algorithm for Batch of IoT Tasks on Fog and Edge Computing Environments	Deepak, Manoj Kumar Upadhyay, Mahfooz Alam	Iran Journal of Computer Science
117	Study of role of different defects on the performance of CZTSe solar cells using SCAPS	Arpit Swarup Mathur, Shalini Dubey, Nidhi, B.P. Singh	Optik

118	Tunable optical nonlinearity of Au-TiO ₂ nanocomposites	Avesh Kumar, R.P. Singh, T. Mohanty, Ajay Taneja	Photonics and Nanostructures – Fundamentals and Applications
119	Deep Learning Techniques for Intrusion Detection Systems in Healthcare Environments	Mahfooz Alam, Zubair Ashraf, Priya Singh, Bishwajeet Pandey, Kaleemur Rehman, Laura Aldasheva	2025 IEEE 14th International Conference on Communication Systems and Network Technologies (CSNT 2025)
120	Critical Evaluation of Thermal, Optical and Morphological Properties of V, S and Dy Doped-ZnO/PVDF/Functionalized-PMMA Blended Nanocomposites	Neetika Singh, Hari Madhav, Shweta Yadav, Gautam Jaiswar	Journal of Inorganic and Organometallic Polymers and Materials
121	Sensor-based monitoring of air quality in semi-urban and rural area of Northern India: a case study	Kalpna Rajouriya, Shikha, Tulika Tripathi, Ajay Taneja	Air Quality Monitoring and Management Using Sensors
122	Budget Aware Load Balancing Algorithm with Strict Deadline Constraints for Efficient Resource Utilization in Fog and Edge Environments	Deepak, Manoj Kumar Upadhyay, Mahfooz Alam	Lecture Notes in Networks and Systems
123	Blockchain-based identity management: Securing customer data in financial services	Rachit Agarwal; Tanya Kumar; Satveer Kaur; Ruchira Prasad; Neeraj Kumar	Transforming the Service Sector With New Technology
124	A subrating channel assignment scheme for cellular radio network with directed retry	M. Jain; Rakhee	Computers and Operations Research
125	Analysis of multidimensional XOR classification problem with evolutionary feedforward neural networks	Manish Mangal; Manu Pratap Singh	International Journal on Artificial Intelligence Tools
126	M/G/1 unreliable server retrial queueing system with Bernoulli schedule and multi-optional service	Madhu Jain; Charu Bhargava	American Journal of Mathematical and Management Sciences
127	Optimal replacement policy for a repairable system with multiple vacations and imperfect fault coverage	Madhu Jain; Ritu Gupta	Computers and Industrial Engineering
128	Load sharing M-out of-N: G system with non-identical components subject to common cause failure	Madhu Jain; Ritu Gupta	International Journal of Mathematics in Operational Research

129	Some perspectives of machine repair problems	Madhu Jain; G.C. Sharma; R.S. Pundhir	International Journal of Engineering, Transactions B: Applications
130	Study of pattern storage technique in Self Organizing Map using Hopfield Energy Function Analysis	Sumeet Gill; Manu Pratap Singh; Naveen Sharma	Proceedings – 2006 14th International Conference on Advanced Computing and Communications (ADCOM 2006)
131	Threshold switch over policy for multi-component machining system with controllable rates	Madhu Jain; Varsha Rani; Rekha Kumari	International Journal of Industrial and Systems Engineering
132	Transient analysis of M/M/R machining system with mixed standbys, switching failures, balking, reneging and additional removable repairmen	Madhu Jain; G.C. Sharma; Neetu Singh	International Journal of Engineering, Transactions A: Basics
133	Performance prediction of an unreliable flexible manufacturing cell with double gripper robot	Madhu Jain; G.C. Sharma; Pankaj Sharma	International Journal of Logistics Systems and Management
134	Redundancy issues in software and hardware systems: An overview	Madhu Jain; Ritu Gupta	International Journal of Reliability, Quality and Safety Engineering
135	Reliability assessment of N-version software fault tolerant system with common mode failures	Madhu Jain; Ritu Gupta	OPSEARCH
136	Discounted costs for repairable units under hybrid warranty	Madhu Jain; Sandhya Maheshwari	Applied Mathematics and Computation
137	Optimal policy for bulk queue with multiple types of server breakdown	Madhu Jain; Praveen Kumar Agrawal	International Journal of Operational Research
138	Blockchain-based identity management: Securing customer data in financial services	Rachit Agarwal; Tanya Kumar; Satveer Kaur; Ruchira Prasad; Neeraj Kumar	Transforming the Service Sector With New Technology
139	A subrating channel assignment scheme for cellular radio network with directed retry	M. Jain; Rakhee	Computers and Operations Research
140	Analysis of multidimensional XOR classification problem with evolutionary feedforward neural networks	Manish Mangal; Manu Pratap Singh	International Journal on Artificial Intelligence Tools
141	M/G/1 unreliable server retrial queueing system with Bernoulli schedule and multi-optional service	Madhu Jain; Charu Bhargava	American Journal of Mathematical and

			Management Sciences
142	Optimal replacement policy for a repairable system with multiple vacations and imperfect fault coverage	Madhu Jain; Ritu Gupta	Computers and Industrial Engineering
143	Load sharing M-out of-N: G system with non-identical components subject to common cause failure	Madhu Jain; Ritu Gupta	International Journal of Mathematics in Operational Research
144	Some perspectives of machine repair problems	Madhu Jain; G.C. Sharma; R.S. Pundhir	International Journal of Engineering, Transactions B: Applications
145	Study of pattern storage technique in Self Organizing Map using Hopfield Energy Function Analysis	Sumeet Gill; Manu Pratap Singh; Naveen Sharma	Proceedings – 2006 14th International Conference on Advanced Computing and Communications (ADCOM 2006)
146	Threshold switch over policy for multi-component machining system with controllable rates	Madhu Jain; Varsha Rani; Rekha Kumari	International Journal of Industrial and Systems Engineering
147	Transient analysis of M/M/R machining system with mixed standbys, switching failures, balking, reneging and additional removable repairmen	Madhu Jain; G.C. Sharma; Neetu Singh	International Journal of Engineering, Transactions A: Basics
148	Performance prediction of an unreliable flexible manufacturing cell with double gripper robot	Madhu Jain; G.C. Sharma; Pankaj Sharma	International Journal of Logistics Systems and Management
149	Redundancy issues in software and hardware systems: An overview	Madhu Jain; Ritu Gupta	International Journal of Reliability, Quality and Safety Engineering
150	Reliability assessment of N-version software fault tolerant system with common mode failures	Madhu Jain; Ritu Gupta	OPSEARCH
151	Discounted costs for repairable units under hybrid warranty	Madhu Jain; Sandhya Maheshwari	Applied Mathematics and Computation
152	Optimal policy for bulk queue with multiple types of server breakdown	Madhu Jain; Praveen Kumar Agrawal	International Journal of Operational Research

Evidence1: <https://dbrauscholar.org/>

Evidence2: <https://dbrau.ac.in/research-papers-publications/>

9.2 PATENTS CITING UNIVERSITY RESEARCH

Dr. Bhimrao Ambedkar University (DBRAU), Agra recognises the importance of research, technology development, and intellectual property creation in promoting innovation-driven and sustainable industrial growth. The translation of academic research into patents and technology-based solutions reflects the University's contribution towards strengthening industry, innovation, and infrastructure.

The University is continuously developing a robust Intellectual Property Rights (IPR) ecosystem to encourage researchers, faculty members, and students to protect and commercialise their innovative ideas. Patent generation and technology transfer activities demonstrate the impact of university research in addressing societal needs, industrial challenges, and emerging technological requirements.

University-Linked Patent Activities

Research and innovation at **Dr. Bhimrao Ambedkar University (DBRAU), Agra** have resulted in several university-linked patents and patent applications across diverse domains, including artificial intelligence, machine learning, digital technology, cybersecurity, healthcare, biotechnology, pharmaceuticals, IoT, and renewable energy. These innovations demonstrate the University's commitment to translating academic research into **practical, technology-driven solutions with industrial and societal relevance.**

The University's Intellectual Property Rights (IPR) Cell actively promotes innovation, intellectual property protection, technology transfer, and the commercial utilization of research outcomes generated by faculty members and students.

Innovation (Start-up)	Innovator Name	Industrial and Technological Relevance
AKAS Standards LLP	Ananya Mittal	Standards, compliance, quality assurance, and technology-driven solutions for improving industrial processes and organizational standards.

CyberYodha Tech LLP	Tanmay Sharma	Cybersecurity, digital protection, threat monitoring, and technology solutions for securing digital infrastructure and organizations.
BuddyCamp LLP	Punit Pal	Digital platform-based services supporting collaboration, networking, and user-centric technology solutions.
Influscout LLP	Sourav Vasdhani	Influencer discovery, digital marketing analytics, campaign management, and data-driven brand promotion.
Aikyamn Consultancy Services LLP	Preeti Singh, Rishu Kumari, Harendra Singh	Technology-enabled consultancy and professional services supporting organizations in business development, management, and digital transformation.
Servio Hub	Vaibhav	Digital service aggregation and technology-enabled service delivery, improving accessibility, coordination, and customer engagement.
Doingly	Nitin Kumar Singh & Saloni Singh	Digital productivity and task/service management solutions that improve workflow automation, coordination, and operational efficiency.
Report Sathi	Samarth Kulshreshtha & Aayush Dixit	Digital reporting and documentation solutions supporting automated report preparation, data organization, and institutional decision-making.
Parental Control App	Monika Yadav	Digital safety and child-protection technology providing parental monitoring, responsible device usage, and online safety management.
Art & Craft	Dorika	Technology-supported creative and handicraft entrepreneurship, promoting digital outreach, product development, and commercialization of creative products.
SolAvia Studio LLP	Pakhi Kackar	Creative technology, design, digital media, and innovative studio-based solutions with potential applications in branding, communication, and digital content creation.
Agrim Technosoft Pvt. Ltd.	Achintya Sharma	Technology-based enterprise solutions with potential applications in software development, digital transformation, automation, and business process optimization.
Akoda Pvt. Limited	Keshav Agrawal	Technology-driven business solutions supporting innovation, digital services, and scalable enterprise applications.

Easymind Space Pvt. Limited	Lavina Munjari	Digital and technology-enabled solutions focused on improving user experience, accessibility, and service delivery through innovative platforms.
Teksna Industries Pvt. Ltd.	Umar Ashraf & Asfia Nadeem	Industrial technology and enterprise solutions supporting manufacturing, product development, process improvement, and technology adoption.
Venuorama Pvt. Ltd.	Major Vaibhav Goyal & Abhishek Singh	Technology-enabled event, venue, and service management solutions improving booking, coordination, discovery, and customer experience.
AI Siksha Learning LLP	Dhruv Agrawal	Artificial intelligence-enabled education and learning solutions, supporting personalized learning, digital pedagogy, and AI-assisted academic services.
Neuronautics Consulting	Anutosh Yadav	AI, data-driven consulting, technology strategy, and intelligent digital solutions for organizational problem-solving and innovation.
Ekokintsugi LLP	Dushyant Singh	Sustainable and innovative solutions integrating technology with environmental responsibility, circular economy principles, and resource efficiency.
TNF Today	Dheeraj Sharma	Digital media and information technology platform supporting content dissemination, digital communication, audience engagement, and online information services.

Evidence: <https://dbrau.ac.in/patents/>

Impact on Industrial Relevance and Technological Capacity

Dr. Bhimrao Ambedkar University (DBRAU), Agra demonstrates its commitment to innovation-driven research by transforming academic outcomes into practical technologies, intellectual property, and industry-relevant solutions. The University's patent activities reflect its growing contribution towards technological advancement, entrepreneurship, and sustainable industrial development.

1. Translation of Research into Industry-Relevant Technologies:

DBRAU promotes the conversion of research outcomes into innovative products, processes, and technologies with potential applications in healthcare, engineering, biotechnology, information technology, environmental sustainability, and other emerging sectors. Patent development activities support technology transfer, commercialisation, and collaboration with industries.

2. Regional Relevance and Sustainable Innovation:

The University's research and innovation initiatives address regional and societal challenges through sustainable technologies, digital solutions, environmental applications, and engineering innovations. These efforts support inclusive industrial development and contribute to sustainable practices aligned with local and national development priorities.

3. Innovation Capacity Building:

DBRAU encourages a culture of innovation through awareness programmes, Intellectual Property Rights (IPR) workshops, research training, entrepreneurship activities, and faculty–student engagement initiatives. These efforts enhance understanding of patent filing, intellectual property protection, and technology commercialisation.

Institutional Support for Innovation

DBRAU has established mechanisms to promote intellectual property generation and innovation through its Intellectual Property Rights (IPR) Cell, research committees, and innovation support initiatives. The University provides guidance, awareness programmes, and institutional support to faculty members, researchers, and students for patent filing, research translation, and technology development.

This innovation ecosystem strengthens the University's ability to convert research knowledge into commercial and societal assets, thereby contributing to **United Nations Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure** through research-led innovation, technological advancement, and sustainable industrial growth.

Brief on Intellectual Property (IP) Policy and Patent Activities

Dr. Bhimrao Ambedkar University (DBRAU), Agra has established an Intellectual Property Rights (IPR) framework to promote innovation, research translation, and the protection of creative and technological outcomes generated by faculty members, researchers, and students. The University's IP policy encourages the development of patents, know-how, software innovations, designs, trademarks, copyrights, and other forms of intellectual property emerging from academic and research activities.

The IP Policy provides comprehensive guidelines for faculty members, research scholars, students, and collaborating organisations regarding intellectual property ownership, protection, technology transfer, commercialisation, licensing, and confidentiality requirements. The policy aims to create a supportive environment that promotes academic freedom, innovative research, entrepreneurship, and the practical application of knowledge for societal and industrial advancement.

The University encourages researchers to identify, protect, and commercialise their innovative contributions through appropriate IPR mechanisms. Support is provided for patent filing, copyright registration, trademark protection, innovation awareness programmes, and capacity-building initiatives related to intellectual property management.

Selected Patent Activities and Industrial & Technological Relevance

Strapless Facemask (Utility Patent): A lightweight, washable, and reusable facemask design demonstrating applied product innovation in the healthcare sector. The innovation contributes to the development of sustainable personal protective equipment (PPE) solutions and supports advancements in medical device technologies.

Microbial Culture Apparatus / Microbiology Method (Utility Patent): A novel approach for the isolation of single microorganisms with potential applications in biotechnology, diagnostics, microbiological research, and laboratory processes. The innovation supports advancements in healthcare technologies and bio-based industrial applications.

Scope of Intellectual Property and Innovation Activities

The Intellectual Property Rights (IPR) framework of Dr. Bhimrao Ambedkar University (DBRAU), Agra covers a wide range of creative, scientific, and technological outcomes generated through academic and research activities. The intellectual property protected under the University's policy includes:

1. **Innovative Processes and Materials:** Development of new materials, synthesis methods, engineering processes, and technology-based solutions.
2. **Product and Service Innovations:** New designs, prototypes, devices, systems, and services with potential societal and industrial applications.
3. **Software and Digital Innovations:** Algorithms, software applications, mobile applications, computational models, communication systems, and technology solutions.
4. **Academic and Educational Resources:** Innovative teaching-learning materials, academic books, research publications, and digital educational content.
5. **Creative and Technical Works:** Artistic creations, engineering drawings, designs, plant varieties, integrated circuit layouts, and other original creative contributions.
6. **Commercial and Brand Assets:** Trademarks, logos, trade secrets, geographical indications, and other legally recognised intellectual assets.
7. **Other Innovative Outputs:** Any creative or research outcome developed by university personnel that qualifies as intellectual property under Government of India guidelines.

The University's IP Policy defines procedures for identification, classification, protection, ownership, and management of different forms of intellectual property, including patents, copyrights, trademarks, and related rights. It provides guidance on IPR registration, technology transfer, commercialisation, and confidentiality management.

DBRAU encourages faculty members, researchers, and students to actively engage in research, innovation, and knowledge dissemination through journal publications, books, conferences, patents, and technology development activities. The University promotes the protection and commercialisation of intellectual property generated through academic and research efforts, strengthening its innovation ecosystem and contribution towards technological advancement.



DR. BHIMRAO AMBEDKAR UNIVERSITY, AGRA

INTELLECTUAL PROPERTY RIGHTS (IPR) POLICY

Protecting Innovation | Promoting Creativity | Benefiting Society



VISION

Encouraging and nurturing intelligent innovation in University.



MISSION

- Protecting new creations
- Promoting entrepreneurship
- Creating an environment for innovative ideas
- Facilitating resources for developing intellectual property
- Identifying and facilitating sources of new ideas and innovations
- Promoting, preserving, encouraging, and facilitating innovation and research among faculty and research students



OBJECTIVES

To establish a framework that stimulates creativity and innovation through Intellectual Property for the benefit of all and to ensure fair, effective and ethical management, protection and utilization of IP generated at the University.

KEY PROVISIONS

- 1 Ownership**
IP generated through University resources, funding or official duties shall vest with the University.
- 2 Disclosure**
Inventors/creators must disclose potential IP to the IPR Cell before any public disclosure.
- 3 Protection**
The University will evaluate and take appropriate steps for protection of IP (patents, copyright, trademarks, designs, etc.).
- 4 Commercialization**
IP may be commercialized through licensing, assignment, technology transfer, start-ups or other lawful means.
- 5 Revenue Sharing**
Returns from commercialization will be shared fairly between the University and the innovators as per policy.
- 6 Support**
The University will provide legal, technical and financial support for IP protection and commercialization.
- 7 Confidentiality**
All IP-related information shall be kept confidential until proper protection is secured.
- 8 Publication**
Research publication is encouraged, but may be delayed to protect IP rights.
- 9 Compliance**
All activities shall comply with applicable laws, regulations and ethical standards.
- 10 IPR Cell**
An IPR Cell will manage IP-related activities including awareness, support, protection and commercialization.
- 11 Dispute Resolution**
Disputes will be resolved through appropriate institutional mechanisms.
- 12 Third-Party Rights**
Respect for third-party IP and proper attribution is mandatory.

IPR CATEGORIES COVERED



Patents & Inventions



Copyright & Software



Trademarks & Service Marks



Designs



Trade Secrets & Know-how



Databases & Other IP



OUR COMMITMENT

We are committed to fostering innovation, protecting intellectual property and creating value for our University, innovators and society.



GUIDING PRINCIPLE

Balancing protection and dissemination of knowledge, academic freedom and commercialization for the greater public good.

INNOVATE • PROTECT • IMPACT

Intellectual IP Policy

Evidence1: <https://www.dbrausdg.in/>

Evidence2: <https://dbrau.ac.in/ipr-cell/>

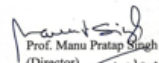


Dr. Bhimrao Ambedkar University, Agra
(Formerly: Agra University)
(A+ Grade, NAAC Accredited)

Date: 12/01/2026

TO WHOM IT MAY EVER CONCERN

Dr. Bhimrao Ambedkar University, Agra has adopted innovation and start-up policy by formulating an inclusive and responsive Innovation Entrepreneurship action plan at departmental level. Different departments participated in different events of start-up at various places and won many prizes.


Prof. Manu Pratap Singh
(Director)
Institute of Engineering & Technology
Dr. B. R. Ambedkar University
Khandari Campus, Agra


Ajay Mishra
PCS
(Registrar)
Dr. B. R. A. University, Agra



Dr. Bhimrao Ambedkar University, Agra
(Formerly: Agra University)
(A+ Grade, NAAC Accredited)

Date: 12/01/2026

TO WHOM IT MAY EVER CONCERN

Dr. Bhimrao Ambedkar University Agra has established an innovation laboratory the new-bud for exploring activities talent of students. Laboratory has much equipment for performing various i.e. 3D printer, kits for robotics, PCB designing kit, CNC machine and many more.


Prof. Manu Pratap Singh
(Director)
Institute of Engineering & Technology
Dr. B. R. Ambedkar University
Khandari Campus, Agra


Ajay Mishra
PCS
(Registrar)
Dr. B. R. A. University, Agra



Dr. Bhimrao Ambedkar University, Agra
(Formerly: Agra University)
(A+ Grade, NAAC Accredited)

Date: 12/01/2026

TO WHOM IT MAY EVER CONCERN

Dr. Bhimrao Ambedkar University Agra will participate in various schemes launched by Government of India such as Start-Up innovation cell, Student learning assessment (PARAKH), TEQIP-III, RUSA, Swachh Bharat Abhiyan, Unnat Bharat Abhiyan etc. as per AICTE norms in future.


Prof. Manu Pratap Singh
(Director)
Institute of Engineering & Technology
Dr. B. R. Ambedkar University
Khandari Campus, Agra


Ajay Mishra
PCS
(Registrar)
Dr. B. R. A. University, Agra



Dr. Bhimrao Ambedkar University, Agra
(Formerly: Agra University)
(A+ Grade, NAAC Accredited)

Date: 12/01/2025

TO WHOM IT MAY EVER CONCERN

Intellectual Property Right Cell of Institute of Engineering and technology, Dr. Bhimrao Ambedkar University Agra has been constituted for IP generation and technology transfer activities with the following as members:

Representatives:

1. Dr. Greesh Kumar Singh : 79062845932
2. Er. Prashant Maharishi : 86301553323
3. Er. Amol Kumar : 9639368629


Prof. Manu Pratap Singh
(Director)
Institute of Engineering & Technology
Dr. B. R. Ambedkar University
Khandari Campus, Agra


Ajay Mishra
PCS
(Registrar)
Dr. B. R. A. University, Agra

9.2.1 Number of Patents Citing University Research

S. No.	Mention Year	Number of Patents Published	Granted Patent Number
1	2026	1	499088-001
2	2025	2	463235-001, 202511056998
3	2024	3	202411005859A, 202411005858A, 202321084017
4	2023	7	397468-001, 395202-001, 388821-001, 376695-001, 356747-001, 376694-001, 202311076092A
5	2022	5	202022104675, 202211252994, 2022/07822, 202241032348, 202211004303
6	2021	9	A01G0025160000, 202141053715, 202111055001, 202111051627, 202131049816, 202121048426A, 2021101579, 20211100947, 202111017223A
7	2019	2	201911020615A, 201911007156A
	Total	29	—

Glimpse of IPR Portfolio at DBRAU: Innovation and Research Achievements

Dr. Bhimrao Ambedkar University (DBRAU), Agra demonstrates a strong commitment to research, innovation, and technology development through its growing Intellectual Property Rights (IPR) portfolio. The continuous filing and publication of patents reflect the University's focus on transforming research ideas into innovative solutions with industrial and societal relevance.

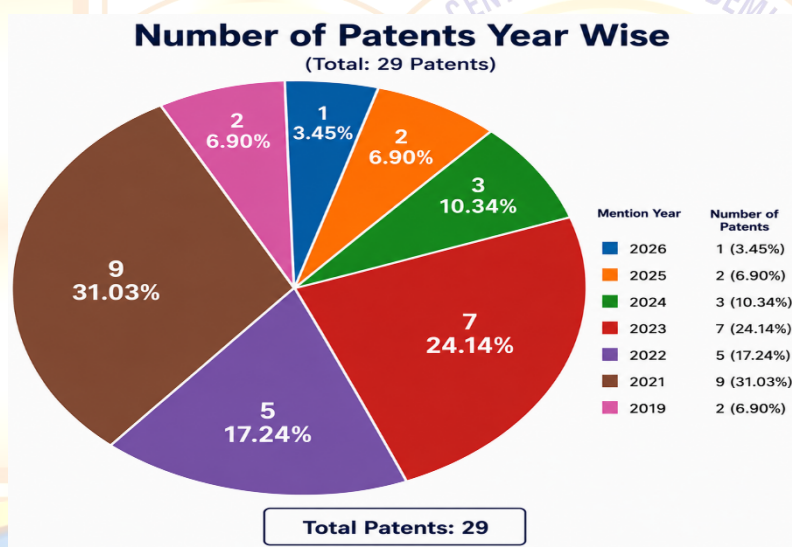
The University's patent activities highlight a sustained innovation ecosystem, with significant achievements in patent publications and grants across diverse research domains. This consistent performance demonstrates that innovation is an integral part of the University's research culture rather than a one-time initiative.

The progression from research ideas and patent filings to granted intellectual property reflects DBRAU's efforts towards technology advancement, knowledge transfer, and industry-oriented innovation. These initiatives strengthen the University's contribution to **United Nations**

Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure by promoting scientific discovery, technological capability building, entrepreneurship, and sustainable industrial development.

Glimpse of IPR Portfolio at DBRAU:

- Continuous growth in patent filing and publication activities.
- Promotion of research-driven innovation across multidisciplinary domains.
- Support for faculty members, researchers, and students in intellectual property creation.
- Advancement of technology transfer and industry-relevant solutions.



IPR Portfolio and Future Commercialisation Strategy

The growing portfolio of published patents and other intellectual property assets reflects DBRAU's strong innovation ecosystem and its contribution to knowledge creation, technological advancement, and industry-oriented research. The successful generation of patents, copyrights, designs, and other intellectual property strengthens the foundation for inclusive and technology-driven industrial development.

The University aims to further enhance the impact of its intellectual property by focusing on the transition of research outcomes from innovation and disclosure stages towards commercialisation. Future strategies include promoting technology transfer, industry collaboration, startup development, and incubation support for promising innovations.

Through its innovation and entrepreneurship ecosystem, DBRAU will encourage faculty members and students to transform protected intellectual property into market-ready solutions. The University will support licensing opportunities, collaborative ventures, and startup initiatives to maximise the societal and economic impact of research outcomes.

This approach will strengthen the University's contribution to **United Nations Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure** by promoting research commercialisation, entrepreneurship, technology transfer, and sustainable industrial innovation.

List of Patents

S.No	Name of Inventor(s)	Title of Invention	Official Status	Patent Granted Date	Patent Grant Number
1.	Parvi Garg et.al	Smart Bandage for Wound Monitoring	Publish ed	23-04-2026	499088-001
2.	Neeraj Madhuria et.al	Machine Learning Based Digital Temperature Reading Pharmaceutical Kiosk	Design	23-06-2025	463235-001
3.	Prof. Sangeeta Dayal	A System And A Method For Genetic Authentication of Medicinal Plants in the Convolvulaceae Family Using RAPD Markers	Publish ed	27-06-2025	202511056998
4.	Prof. Manu Pratap Singh & Others	Adjustable Wooden Corner Shaping Assistive Device	Publish ed	09/02/2024	202411005859 A
5.	Pratibha Rashmi et.al	Automated Farm Produce Grating Device	Publish ed	09-02-2024	202411005858 A
6.	Dr. Abhay B. Solunke et.al	Identifying Micro Organisms from Marine Sediments: Human Nutrition and Health	Publish ed	05-01-2024	202321084017
7.	Dr. Neelam Yadav	A System and Method for Language Learning through Digital Technology: A consequences for Applied Linguistics	Publish ed	07.11.2023	202311076092 A

8.	Prof. V.K.Saraswat	Online banking security monitoring device	Design	12.10.2023	397468-001
9.	Prof. V.K.Saraswat	Device for wireless transaction security	Design	15.09.2023	395202-001
10.	Dr. Ravi Shekhar	A Novel Instrument of reaction progress tool with thermosatatic heating mantle for laboratory purpose	Publish ed	12.06.2023	388821-001
11.	Prof. V.K.Saraswat	Authentication device for online transaction	Design	04.01.2023	376695-001
12.	Prof. V. K. Saraswat & Others	Biometric Authentication Device	Design	04-01-2023	356747-001
13.	Prof. V.K.Saraswat	Mail Authentication device using biometrics	Design	04.01.2023	376694-001
14.	Dr. Bhoomika Chaudhary	A System for performing botanical and physico chemical standardization of murraya koengh (German)	Publish ed	28.09.2022	202022104675
15.	Dr. Ravi Shekhar	Formulation, Synthesis and Pharmacological Evaluation of Oral Dispersable Tablets of Schiff base Compounds	Publish ed	16.09.2022	202211252994
16.	Dr. Bhoomika Chaudhary	A Composition and a Method for Synthesizing Topical Ethosomal Gel Of Melatonin To Prevent Ultra Voilet Radiation (SOUTH AFRICA)	Publish ed	13.07.2022	2022/07822
17.	Prof. L.K. Mishra	Increased Productivity by using an Intelligent Human Resource Management System (IHRM)	Publish ed	17.06.2022	202241032348
18.	Dr. Ravi Shekhar	Synthesis, formulation and evaluation of antifungal cream of Schiff base compounds	Publish ed	25.01.2022	202211004303
19.	Prof. Manu Pratap Singh	Cloud Supported & Machine Learning Driven Efficient IOT Based Watering System for Home Based Plants	Publish ed	10.12.2021	A01G0025160000
20.	Prof. L.K. Mishra	Analysis of Business-to-Business (B2B) E Commerce for the Growth of Indian Economy Sector	Publish ed	10.12.2021	202141053715

21.	Prof. L.K. Mishra	Real Time Intelligent System For Personalised Hospitality Service For Hotel Guests Using Machine Learning	Publish ed	03.12.20 21	202111055001
22.	Prof. L.K. Mishra	Intelligent System For Management of Healthcare Recourses in Hospital using Data Mining & Machine Learning	Publish ed	19.11.20 21	202111051627
23.	Dr. Kaushal Rana	System for Intelligent Computer Assisted Motion robot for Construction Work based on Cloud Computing	Design	30.10.20 21	202131049816
24.	Prof. V. K. Saraswat	IoT based health monitoring system for covid-19 patient	Design	29.10.20 21	202121048426 A
25.	Dr. Ravi Shekhar	System and method for identification/prediction of breast tumor at every stage	Publish ed	05.05.20 21	2021101579
26.	Dr. Ravi Shekhar	Formulation of phenylethanone derivatives & biological activity	Publish ed	12.03.20 21	20211100947
27.	Dr. Ravi Shekhar	A method for preparation of nanofibres	Publish ed	13.04.20 21	202111017223 A
28.	Dr. Greesh Kumar Singh	Microprocessing unit based system for tracking and controlling solar panel based on sunlight	Design	24.05.20 19	201911020615 A
29.	Dr. Ravi Shekhar	Compressed double layered disc	Publish ed	15.03.20 19	201911007156 A

Category-wise Patents/Innovations and Industrial & Technological Relevance

1. Healthcare, Medical Devices & Pharmaceutical Technology

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Parvi Garg et.al	Smart Bandage for Wound Monitoring	499088-001	Smart healthcare and wearable medical technology for real-time wound monitoring; potential

				applications in hospitals, clinics, remote healthcare and IoT-enabled patient monitoring.
2	Neeraj Madhuria et.al	Machine Learning Based Digital Temperature Reading Pharmaceutical Kiosk	463235-001	Combines machine learning, digital sensing and pharmaceutical kiosk technology for automated temperature measurement; relevant to pharmacies, hospitals, healthcare kiosks and automated patient-care systems.
3	Dr. Ravi Shekhar	Formulation, Synthesis and Pharmacological Evaluation of Oral Dispersable Tablets of Schiff base Compounds	202211252994	Relevant to pharmaceutical formulation, drug development and pharmacological research, with potential applications in oral drug-delivery systems.
4	Dr. Bhoomika Chaudhary	A Composition and a Method for Synthesizing Topical Ethosomal Gel Of Melatonin To Prevent Ultra Violet Radiation (SOUTH AFRICA)	[Patent Number not provided]	Relevant to pharmaceutical and dermatological product development, particularly topical protective formulations and advanced drug-delivery technologies.
5	Dr. Ravi Shekhar	Synthesis, formulation and evaluation of antifungal cream of Schiff base compounds	202211004303	Supports pharmaceutical research and development of topical antifungal formulations; relevant to pharmaceutical manufacturing, dermatological products and drug research.
6	Prof. V. K. Saraswat	IoT based health monitoring system for covid-19 patient	202121048426 A	Supports remote monitoring of patients using IoT technology; relevant to telemedicine, hospitals, quarantine facilities and remote patient monitoring systems.
7	Dr. Ravi Shekhar	System and method for identification/pr ediction of breast tumor at every stage	2021101579	Applicable to computer-assisted medical diagnosis and early detection of breast tumors; potentially useful in healthcare diagnostics, medical research and clinical decision-support systems.

2. Biotechnology, Plant Science & Biological Sciences

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Prof. Sangeeta Dayal	A System And A Method For Genetic Authentication of Medicinal Plants in the Convolvulaceae Family Using RAPD Markers	202511056998	Supports DNA-based authentication and quality control of medicinal plants; relevant to herbal medicine, pharmaceutical industries, biotechnology, plant research and prevention of adulteration.
2	Dr. Abhay B. Solunke et.al	Identifying Micro Organisms from Marine Sediments: Human Nutrition and Health	202321084017	Relevant to marine biotechnology and microbial discovery; potential applications include pharmaceutical research, nutrition, biotechnology, microbial screening and development of bioactive compounds.
3	Dr. Bhoomika Chaudhary	A System for performing botanical and physico chemical standardization of murraya koengh (German)	202022104675	Useful for quality assessment and standardization of medicinal/plant-based materials; relevant to herbal pharmaceuticals, nutraceuticals, botanical research and quality-control laboratories.

3. Artificial Intelligence, Machine Learning, IoT & Smart Systems

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Prof. Manu Pratap Singh	Cloud Supported & Machine Learning Driven Efficient IOT Based Watering System for Home Based Plants	A01G0025160000	Integrates IoT, cloud computing and machine learning for automated plant watering; relevant to smart homes, precision irrigation, urban agriculture and intelligent resource management.
2	Dr. Kaushal Rana	System for Intelligent Computer Assisted Motion robot for Construction Work	202131049816	Combines robotics and cloud computing for construction activities; potential applications include construction automation, intelligent

		based on Cloud Computing		robotics, remote monitoring and smart construction sites.
3	Dr. Greesh Kumar Singh	Microprocessing unit based system for tracking and controlling solar panel based on sunlight	201911020615 A	Supports automated solar-panel tracking to improve solar energy utilization; relevant to renewable energy, solar power generation and intelligent energy-management systems.

4. Banking, Financial Technology, Authentication & Cybersecurity

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Prof. V.K.Saraswat	Online banking security monitoring device	397468-001	Addresses security monitoring in online banking; relevant to financial institutions, digital banking, transaction monitoring and cybersecurity infrastructure.
2	Prof. V.K.Saraswat	Device for wireless transaction security	395202-001	Designed to improve security of wireless financial transactions; relevant to digital payments, mobile banking, wireless transactions and fintech security.
3	Prof. V.K.Saraswat	Authentication device for online transaction	376695-001	Supports secure authentication during online transactions; relevant to e-commerce, digital banking, fintech and identity-security applications.
4	Prof. V. K. Saraswat & Others	Biometric Authentication Device	356747-001	Provides biometric-based authentication for secure identity verification; relevant to banking, access control, e-governance, digital identity and cybersecurity.

5	Prof. V.K.Saraswat	Mail Authentication device using biometrics	376694-001	Combines biometric authentication with mail/electronic communication security; potential applications include secure communication, identity verification and access-control systems.
---	--------------------	---	------------	---

5. Agriculture, Food Processing & Assistive Technology

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Prof. Manu Pratap Singh & Others	Adjustable Wooden Corner Shaping Assistive Device	202411005859A	Provides an assistive solution for woodworking and corner shaping; relevant to carpentry, furniture manufacturing, vocational training and small-scale manufacturing.
2	Pratibha Rashmi et.al	Automated Farm Produce Grating Device	202411005858A	Automates processing of agricultural produce, reducing manual effort and improving processing efficiency; relevant to food processing, agricultural machinery and rural entrepreneurship.

6. Education, Language Learning & Digital Learning Technology

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Dr. Neelam Yadav	A System and Method for Language Learning through Digital Technology: A consequences	202311076092 A	Supports technology-enabled language learning and digital education; relevant to EdTech platforms, e-learning, language-training systems and digital classrooms.

		for Applied Linguistics		
--	--	-------------------------	--	--

7. Human Resource Management, Business & Hospitality Technology

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Prof. L.K. Mishra	Increased Productivity by using an Intelligent Human Resource Management System (IHRM)	202241032348	Applies intelligent systems to HR management and productivity enhancement; relevant to HR technology, workforce analytics, employee management and enterprise automation.
2	Prof. L.K. Mishra	Analysis of Business-to-Business (B2B) E Commerce for the Growth of Indian Economy Sector	202141053715	Relevant to digital commerce, B2B platforms, business process digitization and technology-enabled economic growth.
3	Prof. L.K. Mishra	Real Time Intelligent System For Personalised Hospitality Service For Hotel Guests Using Machine Learning	202111055001	Applies machine learning to personalized hospitality services; relevant to smart hotels, customer relationship management, service automation and hospitality technology.
4	Prof. L.K. Mishra	Intelligent System For Management of Healthcare Recourses in Hospital using Data Mining & Machine Learning	202111051627	Supports intelligent hospital resource management using data analytics and machine learning; relevant to healthcare administration, hospital operations and decision-support systems.

8. Chemical, Pharmaceutical & Laboratory Technology

S. No.	Inventor(s)	Title of Invention	Patent/Grant Number	Industrial and Technological Relevance
1	Dr. Ravi Shekhar	A Novel Instrument of reaction progress tool with thermosatatic heating mantle for laboratory purpose	388821-001	Provides laboratory instrumentation for controlled heating and reaction monitoring; relevant to chemical laboratories, pharmaceutical R&D, academic research and industrial process development.

2	Dr. Ravi Shekhar	Formulation of phenylethanone derivatives & biological activity	20211100947	Relevant to synthetic chemistry, medicinal chemistry and pharmaceutical research involving biologically active chemical compounds.
3	Dr. Ravi Shekhar	A method for preparation of nanofibres	202111017223 A	Relevant to nanotechnology and advanced materials; potential applications include drug delivery, biomedical materials, filtration, tissue engineering and functional materials.
4	Dr. Ravi Shekhar	Compressed double layered disc	201911007156 A	Relevant to pharmaceutical/material processing and compressed solid-form technology; potential applications include formulation development and manufacturing processes.

9.3 UNIVERSITY SPIN-OFFS

Dr. Bhimrao Ambedkar University (DBRAU), Agra promotes the translation of academic research and innovative ideas into entrepreneurial ventures through its innovation and incubation ecosystem. University-supported startups and spin-off initiatives play an important role in encouraging technology-based entrepreneurship, strengthening industry linkages, and contributing to inclusive economic development.

The University's innovation ecosystem provides support through mentoring, research guidance, Intellectual Property Rights (IPR) assistance, technology transfer facilitation, entrepreneurship training, and industry networking. These initiatives enable faculty members, researchers, and students to transform innovative concepts into scalable products, services, and solutions.

The major focus areas of university-supported ventures include emerging technologies, healthcare innovation, sustainable solutions, engineering applications, digital technologies, and socially relevant innovations.

These initiatives demonstrate DBRAU's commitment towards:

1. **Bridging Research and Market:** Supporting the transition of research outcomes from laboratories to practical applications through product development, technology transfer, and commercialisation.
2. **Promoting Entrepreneurship:** Creating an entrepreneurial culture among students and faculty by encouraging startup creation, innovation challenges, mentoring, and business development activities.
3. **Supporting Regional and Societal Development:** Encouraging innovations that address local and national challenges in areas such as healthcare, agriculture, sustainability, digital transformation, and technology-driven solutions.

Facilities Offered at Innovation and Incubation Centre

The University's innovation and incubation centre provides a supportive ecosystem for startups, entrepreneurs, researchers, and students by offering modern infrastructure, mentorship, and collaborative opportunities.

Co-Working Space: The co-working facility provides a flexible and collaborative workspace equipped with high-speed internet connectivity, meeting facilities, and essential office amenities. It enables startups and innovators to work in an inspiring environment while gaining access to networking opportunities, expert guidance, mentorship sessions, and the broader innovation ecosystem.



Maker's Space: The Maker's Space is designed to encourage creativity, experimentation, and hands-on innovation. It provides a platform where student entrepreneurs, researchers, and innovators can transform ideas into functional prototypes through design, development, and testing. Supported by expert mentors and technical guidance, the facility promotes product development, entrepreneurship, and technology-driven solutions.



Conference Room: The Innovation and Incubation Centre provides a modern conference facility equipped with high-speed internet connectivity, digital display systems, video conferencing facilities, and flexible seating arrangements. The space supports team meetings, workshops, training sessions, investor interactions, and collaborative events, enabling effective communication and knowledge exchange.



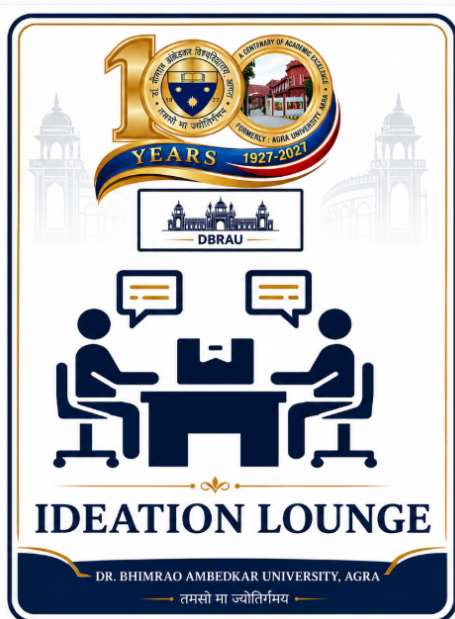
Mentorship Support: The Centre offers structured mentorship support for students, startups, and entrepreneurs through individual mentoring sessions, workshops, expert interactions, and networking opportunities. Experienced mentors guide innovators in refining business ideas, developing strategic plans, addressing challenges, and transforming concepts into sustainable ventures.



Marketing and Business Support Facility: The Centre provides marketing support to emerging startups and innovators through guidance in digital marketing, market research, branding, content development, and promotional strategies. . These resources help entrepreneurs build their brand identity, understand market requirements, expand outreach, and enhance the visibility and impact of their innovations.



Ideation Lounge: The Ideation Lounge at the Innovation and Incubation Centre is designed



as a creative and collaborative space to encourage brainstorming, innovation, learning, and knowledge exchange. Equipped with an open interactive environment, high-speed internet connectivity, and dedicated discussion areas, the facility provides an ideal platform for students, researchers, and entrepreneurs to develop and refine innovative ideas. The lounge supports hands-on workshops, seminars, innovation challenges, boot camps, and startup development activities, enabling participants to enhance their skills, collaborate effectively, and transform creative concepts into impactful solutions.



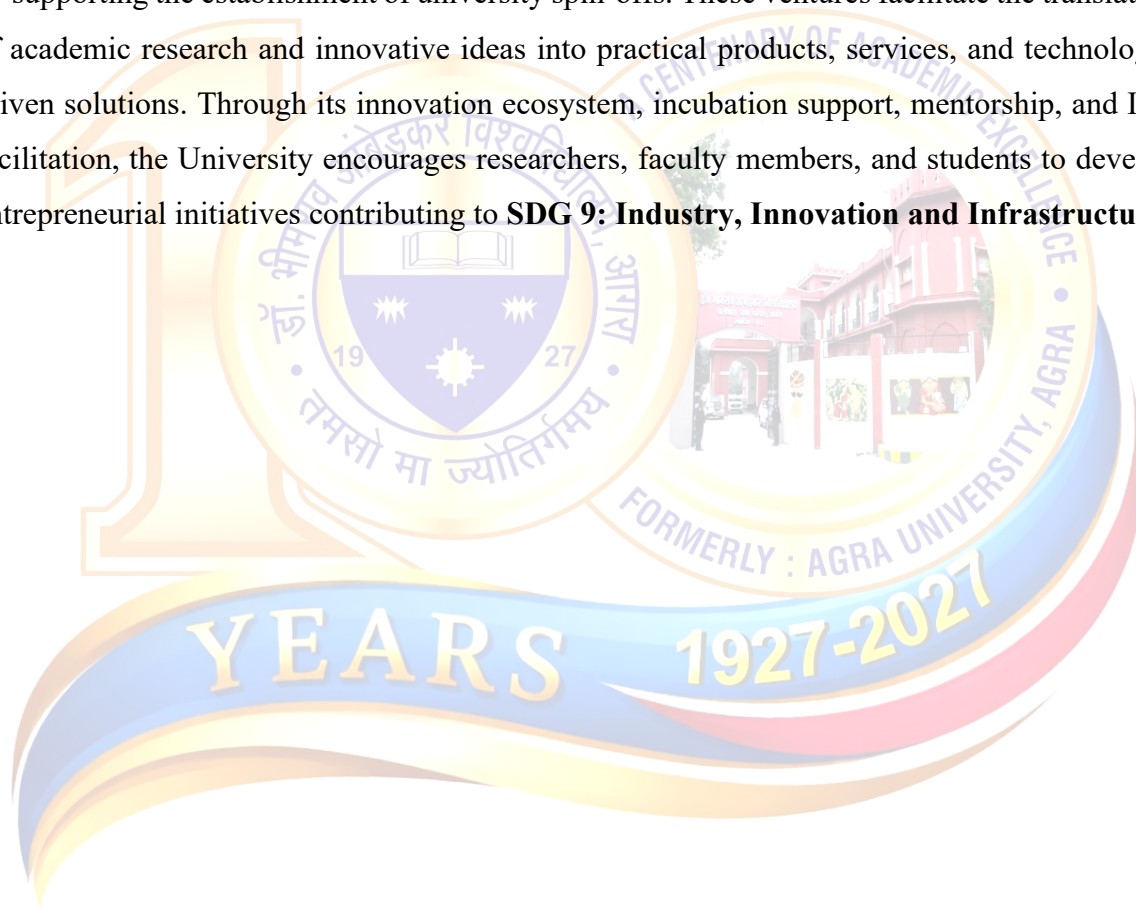
Facilities at DBRAU: Vivekananda Incubation Foundation

9.3.1 Number of University Spin-Offs

SDG 9: Industry, Innovation and Infrastructure

Metric / Indicator Reference	Metric / Indicator	Value
Indicator 9.3.1	Number of University Spin-Offs	

Dr. Bhimrao Ambedkar University (DBRAU), Agra promotes entrepreneurship and innovation by supporting the establishment of university spin-offs. These ventures facilitate the translation of academic research and innovative ideas into practical products, services, and technology-driven solutions. Through its innovation ecosystem, incubation support, mentorship, and IPR facilitation, the University encourages researchers, faculty members, and students to develop entrepreneurial initiatives contributing to **SDG 9: Industry, Innovation and Infrastructure**.





**Kanhiyalal Maniklal Munshi Archival Heritage Museum and Research Centre
 Dr. Bhimrao Ambedkar University, Agra**





DBRAU: IET Centre for Research, Innovation and Entrepreneurship Capacity Building Activities

The Innovation and Entrepreneurship Centre at Dr. Bhimrao Ambedkar University (DBRAU), Agra plays a significant role in strengthening the capabilities of students, faculty members, researchers, and aspiring entrepreneurs to promote innovation, entrepreneurship, and sustainable technological development.

The Centre focuses on developing an entrepreneurial mindset, enhancing innovation skills, and supporting the transformation of academic ideas and research outcomes into practical solutions, startups, and technology-driven enterprises. These initiatives contribute to strengthening regional and national innovation capacity while promoting industry-oriented research and sustainable development.

Key Capacity-Building Pillars

The following initiatives highlight the Centre's commitment to providing comprehensive support for innovation, entrepreneurship, research translation, and enterprise development:

- Innovation and entrepreneurship training programmes
- Mentorship and expert guidance for startups and innovators
- Skill development workshops and hands-on learning activities
- Research-to-market and technology commercialisation support
- Intellectual Property Rights (IPR) awareness and patent facilitation
- Startup incubation and industry collaboration initiatives



Research and Innovation centre for Commerce, Business Management & Economics



DBRAU: Archival and Heritage Research Centre



DBRAU Radio Centre



University Swimming Pool

Evidence: <https://dbrau.ac.in/khandari-campus/>