

VISHWAKARMA UNIVERSITY

SDG 9 REPORT 2021





EDITORIAL BOARD OF THE SUSTAINABILITY REPORT:

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Maximising Human Potential



About This Report

The United Nations “Transforming our World: the 2030 Agenda for Sustainable Development” which includes the 17 Sustainable Development Goals (SDGs) has great importance and significance to universities. The SDGs provide for a shared global vision towards sustainable development for all. Vishwakarma University (VU) firmly believes in the vital role that universities can play in the achievement of the SDGs, and has ingrained this aspect in all of its strategies and operations. As encapsulated in its motto - maximizing human potential, VU, since the year of its inception, has worked endlessly towards creating an enabling environment to ensure the wholesome development of its students - preparing them for life and livelihood.

VU has embarked on an exciting journey to transform the VU Campus to become an EcoCampus, which will be a testbed for innovative sustainability solutions for the future. The vision of the VU EcoCampus is to develop VU as “a global Sustainability thought leader, committed to improving the society, by providing an empowering partnership for the development of technology and educating the future generation”. Sustainability with an aim to reduce the carbon footprint was the key theme of the function organised to celebrate the launch of the ‘Eco Campus’.

This report showcases VU's commitment to sustainable development goals in which VU has been actively working in partnership with diverse stakeholders. One such example is VU's Certificate Programme in Sustainability Management in Cooperation with the Hof University of Applied Sciences Germany, a program in which students gain a deep understanding of state-of-the-art business management techniques and more importantly latest sustainable methods. Likewise, the Wilo Foundation-Vishwakarma University established through a grant from the Wilo Foundation, Germany promotes research in water treatment, purification and create the much-needed social awareness about clean drinking water through its Water Quality Centre of Excellence.

From last 2 years, VU is published SDG reports under its Sustainability mission which outlined the key initiatives undertaken by the Institute to meet the Sustainable Development Goals (SDGs). This report provides a summary of the range of activities undertaken at VU during 2021 to meet the SDGs through its teaching, research, outreach and public engagement, and operations. VU conducts a diverse range of activities across the Institute, and this report lists only some of many such initiatives. Even when all of us were severely affected by the COVID-19 pandemic, VU continually strives to implement sustainability in all its core operations, including by creating a platform to showcase its efforts toward the SDGs in a comprehensive and detailed manner.

VU continually strives to contribute to the sustainable development of the nation and society at large by developing educated and productive human resources that observe and adhere to the practices of equity, inclusiveness, excellence, ethics, and professional standards.

Prof. (Dr) Siddharth Jabade
Vice-Chancellor
Vishwakarma University, Pune, India

VU's Participation in the THE Impact Rankings 2022

Vishwakarma University (VU) also participated last year in Times Higher Education (THE) Impact Rankings 2022, which looks at global universities' commitment and performance in furthering the Sustainable Development Goals (SDGs).

VU took part in the 4 SDGs listed below plus the mandatory SDG17, and the results were as follows:

Overall Ranking 1001+





9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



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

Industry, Innovation and Infrastructure

Vishwakarma University (VU) upholds the spirit of fostering transformational and contextual research and innovation for the greater good of society. The process of education, research, and outreach and innovation and outreach at VU follows the contours of change set by the industry and society. The objective of the engagement with industry is to provide a socially and environmentally responsible solution to the real-life problems of the industry which has a substantial impact.

The industry in the context of this region includes large enterprises, small & medium enterprises, social enterprises, start-ups, and independent professionals. The transdisciplinary centers of excellence in VU provide an enabling platform to meaningfully engage with industry to foster ideation to impact the value chain. In addition, VU inculcates all the unique features in the curriculum, teaching-learning, internships, placements, research, and innovation through various activities. The initiatives for industry connect include;

1. Industry on Campus
2. Centres of Excellence in collaboration with industries
3. Industry Collaborations for sponsored and contract research
4. MoUs with Industry
5. Memberships of Professional Bodies
6. Industry Advisory Board
7. Esteemed Recruiters
8. Events and Sponsorships
9. Representation of Industry Professionals

Industry-University Interaction (Placement and Career Progression Office)

The Career Support Office at VU facilitates job openings, internship opportunities, and paid projects as part of the Campus Placement program for all final year students. With our network of 400+ active recruiters, collaborations, and industry connections, relevant profiles and job roles are made available to students. Through our various initiatives to make students industry-ready and with the help of our Placement and Career Progression Assistance Programme (PCPAP), we boast of a record number of job offers and placements.

<https://www.vupune.ac.in/placement>

Key thrust areas are as follows;

- To seek inputs for curriculum improvement and alignment.
- To broad base connections with industry professionals across sectors.
- To give a wider industry exposure to students and faculty members.
- To assist the departments in inviting industry experts and organizing events.
- To create opportunities for faculty members and students to work on industry projects.
To identify employment, internship, and mentorship opportunities for students.
- To collaborate for innovative projects, entrepreneurship, research, and development.
To forge partnerships for value-added courses and hands-on training for students.

Major initiatives for industry-university linkages are as follows;

- Industry on Campus and Centres of Excellence
- Representation of industry professionals on various committees
- Industry Visits, Live Projects, Freelancing, and Shadowing
- Campus Recruitment Programme and Industry Internships
- Workshops, Talks, Expert Interactions, and Jury
- Memberships of Professional Bodies

- Events and Sponsorships
- Industry Advisory Boards
- Incubation Facilities

Industry Interaction Activities

- One Week Employability Enhancement Programme for the final year students
- Career Orientation Sessions for the First Year Students
- Summer Internship Briefing for the pre-final year students
- Industry on Campus activities for students
- Activities by the Centres of Excellences for students and faculty
- Recruitment drives for the summer internship and semester-long internships
- Live Projects opportunities for the students round the year
- Industry Visits, Hands-on Training, and Workshops by practitioners
- Recruitment drives for placement and jobs
- Industry connects and industry outreach work
- Meetings of the Industry Advisory Boards
- Participation of Industry Professionals in Board of Studies meetings
- Training to students on soft skills and technical skills by industry experts
- Participation in several industry events by faculty and students

<https://www.vupune.ac.in/live-projects/institution-industry-interaction-cell>

MoUs Industry, Government or any other Organizations

The MoUs enables the strengthening of industry-academia engagement. The agreements are signed with reputed organizations comprising large enterprises, MSMEs, Professional Bodies, start-ups, and Social Organizations operating at regional, national, and international levels. Each of these partnerships has a well-defined scope, objectives, and engagement, team members.

The scope of work is mutually decided and consists of aspects like follows;

- Researching emerging issues in the industry
- Providing training to students, teachers, and industry professionals
- Facilitating projects and internships by students in the industry
- Supporting innovations, new projects, and entrepreneurship
- Promoting projects for product development or process developments
- Strengthening efforts to enhance employability of students

The MoUs are signed with and active engagement is going on with the following organizations:

ORGANIZATION	NATURE OF LINKAGE/ COLLABORATION	BRIEF ABOUT ORGANIZATION
Buldhana Urban Cooperative Credit Society	Industry Participation in Curriculum Design and Delivery – Micro-Finance	Buldana Urban was established in 1986, with 456 branches in 4 states of India as of today. With an aim to bring industrial perspective in our curriculum and to enable industry participation in curriculum design VU collaborate with Buldana Urban.
Tata Technologies Ltd.	Setting up competency centre	Tata Technologies Limited is a company in the Tata Group that provides services in engineering & design, product lifecycle management, manufacturing, product development, and IT service management to automotive and aerospace original equipment manufacturers & their suppliers.

ORGANIZATION	NATURE OF LINKAGE/ COLLABORATION	BRIEF ABOUT ORGANIZATION
Techniche Engineering P Ltd	To develop transdisciplinary Competency Centres	Techniche Engg. Pvt. Ltd. have know-how in the domain of risk & safety studies and training for various industries.
Inflexion Analytix P Ltd	Centre for Artificial Intelligence & Advanced Analytics (CAIA)	Inflexion Analytics was founded to help ambitious companies compete with larger competitors by providing access to the same high quality data analytics services at a market leading price.
Indian Society for Training & Development	Conducting joint research on emerging issues in training and development	Indian Society for training & development involved in the area of training and development of human resource from government, public and private sector organizations & enterprises, educational and training institutes and professional bodies.
Queen Mary's Technical Institute	To support differently abled soldiers and their dependents.	Queen Mary's Technical Institute, earlier known as Queen Mary's Technical School for Indian Disabled Soldiers, was founded by Lady Marie Willingdon
INFLIBNET Centre	To promote open access to scholarly content generated in universities	INFLIBNET Centre, an Inter-university Centre of the University Grants Commission, as its mandate, promotes open access to scholarly content generated in universities.
Seiler Garepa India Pvt. Ltd	Conducting research on emerging issues in the industry	Seiler Garepa India Pvt. Ltd. is established with the mission of Make in India. It's a joint venture between Garepa Engineers and M/s Seiler Vakuumtechnik GMBH.
IES India Ltd	Authorize Training Partner	Integrated Environmental Solutions Ltd is a software and consultancy company that specializes in building performance analysis. IES create software tools for designing and operating energy efficient buildin
Dr. L. Subramaniam Foundation	To provide learning curriculum as per UGC guidelines relating to music courses	Subramanyam foundation is engaged in music education
Confederation of Indian Industry	Yuva vision to influence inspire and motivate millions of students across the country	Young Indians (Yi) is an initiative and integral part of the Cil formed with an objective of creating a platform for Young Indian's to realize the dream of a developed nation
Young Indians Wilo Mather and Platt Pumps	To develop Vertical Sewage Treatment Plant	Wilo SE is a European manufacturer of pumps and pump systems for the building technology, water and industrial sectors with headquarters in Dortmund, Germany.
Ogee Studio Pvt. Ltd.	Develop courses on user experience and user interface design	Ogee Studio specializes in the design and development of compelling, modern, rich user experiences (UX & UI) and interactive visualizations for complex information systems in the B2B space.

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Industrial Metal Powders India P Ltd.	Conducting research on emerging issues in the industry	Industrial Metals Powders (India) Pvt. Ltd is in the business of supply of electrolytic iron powder and other iron components to various industrial, nutritional, cosmetic and other applications.
Mahesh Industries Group (MIG)	Interface with micro, small and medium Enterprises	It is not for profit organisation, committed to promote and encourage new age entrepreneurs and be a networking platform for fellow Maheshwari Industrialist. Collaboration provides students an interface with micro, small and medium enterprises
TGC Technologies Pvt. Ltd.	Capacity building and projects in gamification	VU and TGC decided to work together with a vision of Conducting research on emerging issues in the industry related to gamification and allied disciplines, by engaging a cross-functional specialized group of teachers and students on the gamification projects.
Jnana Prabodhini's Institute of Psychology (JPIP)	Psychometric assessment and counselling	Jnana Prabodhini's Institute of Psychology (JPIP) is an offspring of Jnana Prabodhini - the mother Institute and a psychology wing of Jnana Prabodhini Sanshodhan Sanstha (JPSS) and it is affiliated to the University of Pune as a research centre.
Unity Technologies Ltd	Unity academic training partner	UTECH has developed a game creation system and rendering engine known as unity products (as defined below) and grants to certain individuals and organizations nonexclusive licenses to use the Unity Products for the development of 2D, 3D and Virtual Reality / Augmented Reality / Mixed Reality content.
Riskpro management consulting p Ltd	Conducting research on emerging issues in the industry	Riskpro Management Consulting Pvt. Limited is one of the leading management consultancy firms in the fields of forensic accounting, due diligence, digital forensics and verification services. market intelligence for banking, insurance and corporate sector companies with use of advanced information technology and investigative tools.
Accurate Gauging	Oxygen generator system design and develop	Accurate is a pioneer in the field of metrology in India that believes in partnering quality metrology solutions which are delivered to various industry segments such as automobile, engineering, aerospace, railways, energy, oil and gas, medical engineering, government sector, and technical education.
Jardins Consultants	Development and delivery of educational programmes	Dealing with senior level negotiations and connections with individuals and companies to facilitate commercial relationships with companies and other organisations in India.

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KPRC Partners LLP	Development of online course/s	KPRC Partners LLP is limited liability partnership firm and it provides Legal Consultancy and advisory Services including corporate secretarial compliances services. KPRC is also engaged in development and delivery of educational programs at different forums for undergraduate and postgraduate students.
Entrepreneurship Development Center	Conducting IP related talks/workshops	It nucleates and nurture technology and knowledge-based enterprises for India by leveraging the scientific and engineering competencies of the institutions
Schmersal India Private Limited	Development of online course/s	Schmersal is engaged in manufacturing and trading a wide range of switching products to enhance the safety of men and machines.
IoTIoT	Organizing workshop	To bridge the industry-academia gap using a learn by doing approach
Wizcraft MIME	Innovation and technology development, facilitation and capacity development	Wizcraft Management Institute of Media and Entertainment
A&I Digest	Conducting research on emerging issues in the industry	A&I is a forum for architects and interior designers, publications, design exhibitions, events, seminars, etc.
ASSOCHAM	Membership	The Associated Chambers of Commerce and Industry of India is a non-governmental trade association and advocacy group based in New Delhi, India. The organisation represents the interests of trade and commerce in India, and acts as an interface between issues and initiatives.
Robonik India P Ltd.	To the design and development of point-of-care diagnostic devices and its specific features	Robonik india private limited, is a manufacturer, supplier and exporter of this impeccable range of diagnostic equipment.
DCF Ventures LLP	Service Providing	DCF Ventures connects global start-ups with Indian corporations looking at innovation. Apart from this the company provides innovation consulting for corporations and governments.
Tata Consultancy Ltd	To provide TCS application system and TCS service Environment	TCS industry honour programme, is a set of structured industry designed courses in an industry relevant domain or technology offered to the institutions, institutions can integrate this set of courses with their existing degree programs to create a specialization degree in the industry relevant domain or technology

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Research for Resurgence Foundation (RFRF), Nagpur	Collaborative research and innovation	The RFRF is a multi-domain research institute and a network hub of research and allied activities in academics and industrial sector.
Design Media and Edutainment solution Pvt. Ltd	Industry Partner to deliver courses	Design- Media & Edutainment Solutions is a renowned design solutions company providing dedicated services in advertising and film design verticals.
Ethnus Blueminds Consultancy LLP	Finishing School Training	Ethnus offers industry-recognised certification programs in emerging technologies. It prepare learners for the future of work, training people in skills companies need.
Blueminds Consultancy LLP	Consultancy Services on social media	Blueminds offers services in career counselling, job search strategy & personal branding, resume building/linkedin profile building & effective interviewing skills
Bindurekha Fashion Studio	Conducting contemporary research in the area of ethnic apparel and jewellery design	Bindurekha Fashion Studio is label in premium range designer fashion jewellery based in Pune, design, manufacture and supply to leading apparel stores and brands throughout India
IMS India	Examinations training, guidance and support.	IMS is one of India's pioneering institutions in management education training, and was single-handedly responsible for building awareness
Mr. Shantanu Kulkarni	Development of online course/s	
The Indus Entrepreneurs Association Pune Chapter	To promote creation of high impact start-ups that generate social and economic value for Indian society and the world-at-large.	TiE is a non-profit, global community welcoming entrepreneurs from all over the world. They believe in the power of ideas to change the face of entrepreneurship and growing business
Sahyadri Farmers Producer Co. Ltd	To understand the model of farmer producer companies	SFPCL is India's one of the largest farmers producer company which is 100% farmed owned, professionally managed, grower producer company, which has business of producing, and supplying fruits and vegetables, fruit pulps, purees and pastes of fruits and vegetables and related products.
Teenzclap Futureworks (OPC) Private Limited	Delivering skill-based course/s	Teenzclap's mission is to help learners achieve success with empathy and focus on impact-led outcomes, one of the least understood aspects of developing self.
ANA Cyber Forensic Pvt. Ltd., Pune	Development of online courses in field of cyber security	ACF provides services into cyber security along with compliances, digital forensics, cyber laws and training.

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Kusum Life Science	Consulting services	A Kusum Life science is a preclinical contract research organization to provide quality preclinical, pharmacology, analytical and animal supply services
JT Foundations (NGO)	Development of Online Courses in field of Diabetes and Obesity Management	JT Foundations is a non- governmental organization registered under section 8 of the companies act, 2013.

Institutional Memberships

FICCI	Membership	Established in 1927, the Federation of Indian Chambers of Commerce and Industry (FICCI) is the oldest, largest and the apex business chamber in India. Our history is closely interwoven with India's independence struggle and now with her emergence as one of the most rapidly growing economies globally.
ASSOCHAM	Membership	The Associated Chambers of Commerce and Industry of India is a non-governmental trade association and advocacy group based in New Delhi, India. The organisation represents the interests of trade and commerce in India, and acts as an interface between issues and initiatives.
ADI	Membership	Association of Designers of India (ADI) vision is to be a world class network representing professional interests of Indian Design community, creating a meaningful interface between design professionals, people as users, the industry, education institutions and the policy makers.
NIPM	Membership	National Institute of Personnel Management (NIPM), is the only all India body of professional managers engaged in the profession of Human Resource Management, Industrial Relations, Labour Welfare, and Training & Development in the country.
ISTD	Membership	Indian Society for Training & Development (ISTD) Organizes Training Programs, all over the country both at Chapter and National Levels. The Programs cover selected areas of HRD with special emphasis on Training of Trainers, Training Goals & Objectives and Training Tools & Technologies.
WF-NEN	Membership	Wadhvani Foundation (WF) is a not-for-profit with the primary mission of accelerating economic development in emerging economies by driving large-scale job creation through entrepreneurship, innovation and skills development.
MCCIA	Membership	Mahratta Chamber of Commerce, Industries and Agriculture continuously strives to promote Pune as a premier investment destination as well as a major global source of quality products and services. MCCIA has been instrumental in setting up and bringing to Pune several institutions important for business.

CII-Yi	Student Chapter	Confederation of Indian Industry-Young Indians (CII-Yi) engage students in various initiatives that the students conceptualize, and execute. In tune with the Yuva vision to influence inspire and motivate millions of students across the country, Yi is working with Vishwakarma University by forming a Yi Yuva chapter at VU
NHRDN	Membership	Established over 30 years ago, National human resource development NHRDN is an autonomous, not-for-profit professionally managed organization, playing a catalyst role in grooming leaders for tomorrow.
NIQR	Membership	National Institute for Quality and Reliability (NIQR) came into existence in July 1987 with the amalgamation of National Institution of Quality Assurance and Indian Association of Quality and Reliability.
TSSC	Membership	Telecom Sector Skill Council (TSSC) is a Non-Profit Organization, registered under the Societies Registration Act, 1860. It is an industry-led apex body, jointly set up by the Cellular Operators Association of India (COAI), Indian Cellular and Electronics Association (ICEA) and National Skill Development Corporation (NSDC), to ensure adequate availability of skilled manpower to boost growth and productivity in the Telecom sector.
APTI	Membership	Association Of Pharmaceutical Teachers of India (APTI) - an association found by the pioneers of Pharmacy education in India in 1966 by leading personalities like Prof. M. L. Schroff, Prof. G. P Srivastava and others, has come a long way in creating better intercommunication and promotion of excellence in pharmacy education.
IPA	Membership	Indian Pharmaceutical Association (IPA) is a non-governmental organization National body representing over 1 million pharmacists and pharmaceutical scientists from Industry, Academia, Regulatory, Hospital and Community Pharmacy and work to meet the India's health care needs.
SFE	Membership	Society for Ethnopharmacology (SFE) is constituted by the eminent academicians, researchers, industrialists with the vision of providing an environment for knowledge sharing among researchers, healthcare practitioners, and decision-makers interested in Ethnopharmacology.
FIP	Membership	The International Pharmaceutical Federation (FIP) is the global body representing over 4 million pharmacists and pharmaceutical scientists. It works to meet the world's health care needs. FIP is a non-governmental organisation that has been in official relations with the World Health Organization since 1948.

Maximising Human Potential through Research

Vishwakarma University focuses on socially, environmentally responsible, and need-based multi-disciplinary transformational research for the greater good. Driven by the vision of 'Maximising Human Potential,' the University is laying the foundation to achieve its vision with high-quality research and

inculcating a research culture among all the stakeholders. The University has faculty members from diverse disciplines who focus on diverse research areas.

Improving and delivering high-quality research is necessary for creating successful applications for societal needs. Creating technological and social innovations has emerged as an important goal alongside the R & D-based activities. The University is working relentlessly to foster a research culture and contribute towards societal benefits.

<https://research.vupune.ac.in/ourresearchers>

Key Initiatives to Strengthen the Research Culture

- Director Research and Director Innovation, IPR & Entrepreneurship have been appointed for policy-making and initiating various R&D-related activities.
- To percolate the policies and vision related to research, the Vice-Chancellor nominates members from every faculty in the Research Initiative Cell and the IPR & Entrepreneurship Cell.
- For faculty development, efforts such as deputing faculty for internships in industry, deputation for collaborative research, encouragement to pursue a doctorate, facilitation of knowledge creation, training, and organisation of faculty competitions are undertaken regularly.
- Based on individual expertise, every faculty is encouraged to generate funds through consultancy/ research projects/training/patents.
- To bring out the students' research potential, the University is doing significant innovations in the Teaching-Learning process such as project-centric learning, student conferences, technical activities, and semester-long internships in industry or research organisations.
- The University has established Centres of Excellence (COE) in identified thrust areas by collaborating with International Universities and Industries.

<https://research.vupune.ac.in/index>

Research Support

VU is committed to fostering the research culture by inculcating research aptitude among all the stakeholders including but not limited to faculty members, researchers, students, other employees of VU. To achieve this goal VU is committed in providing support in the form of various initiatives including but not limited to: the VU Vision of Maximizing Human Potential to achieve this, the University is laying the foundation for high quality research. VU has taken the initiative to financially assist and support faculty members, researchers, students, and other employees in undertaking research projects (in-house) or submitting research proposals to Government and Non-Government organizations. To encourage young faculty, staff and other employees to undertake the research VU provides support in the form of a Research Grant.

<https://research.vupune.ac.in/policies>

<https://research.vupune.ac.in/facility>

Publication of 2021

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
Water quality monitoring and management of building water tank using industrial internet of things	Sustainability	https://www.mdpi.com/2071-1050/13/15/8452
Amalgamation of blockchain & sixth generation envisioned responsive edge orchestration in future cellular vehicle to anything ecosystems: Opportunities & challenges	Transactions on Emerging Telecommunications Technologies	https://onlinelibrary.wiley.com/doi/10.1002/ett.4410?af=R
Deep learning approach for analysis and characterization of COVID-19	Computers, Materials and Continua	https://www.techscience.com/cmcc/v70n1/44411
Internet of things and long-range-based smart lampposts for illuminating smart cities	Sustainability	https://www.mdpi.com/2071-1050/13/11/6398
Hybrid Architectural Network Implementation to Realize a Fire Evacuation Path with 2.4 GHz Zigbee and LoRa	Sustainability	https://www.mdpi.com/2071-1050/13/23/13238
Cloud Server and Internet of Things Assisted System for Stress Monitoring	Electronics	https://www.mdpi.com/2079-9292/10/24/3133
Blockchain Enabled Automatic Reward System in Solid Waste Management	Security and Communication Networks	https://www.hindawi.com/journals/scn/2021/6952121/
Role of wireless aided technologies in the solid waste management: A comprehensive review	Sustainability	https://www.mdpi.com/2071-1050/13/23/13104
SDSWSN—A Secure Approach for a Hop-Based Localization Algorithm Using a Digital Signature in the Wireless Sensor Network	Electronics	https://www.mdpi.com/2079-9292/10/24/3074
Zigbee and long-range architecture based monitoring system for oil pipeline monitoring with the internet of things	Sustainability	https://www.mdpi.com/2071-1050/13/18/10226
Deep learning approach for discovery of in silico drugs for combating COVID-19	Journal of healthcare engineering	https://www.hindawi.com/journals/jhe/2021/6668985/
MNet: A Framework to Reduce Fruit Image Misclassification.	Ingénierie des Systèmes d'Inf.	https://iieta.org/journals/isi/paper/10.18280/isi.260203
Electricity load forecasting and feature extraction in smart grid using neural networks	Computers & Electrical Engineering	https://www.sciencedirect.com/science/article/abs/pii/S0045790621004341

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
A novel approach for securing nodes using two-ray model and shadow effects in flying ad-hoc network	Electronics	https://www.mdpi.com/2079-9292/10/24/3164/htm
IoT based facial emotion recognition system using deep convolution neural networks	Electronics	https://www.mdpi.com/2079-9292/10/11/1289
Clustering isolated nodes to enhance network's life time of WSNs for IoT applications	IEEE Systems Journal	https://ieeexplore.ieee.org/document/9525060
Real-Time Facial Emotion Recognition Framework for Employees of Organizations Using Raspberry-Pi	Applied Sciences	https://www.mdpi.com/2076-3417/11/22/10540
NO2 pollutant concentration forecasting for air quality monitoring by using an optimised deep learning bidirectional GRU model	International Journal of Computational Science & Engineering	https://dl.acm.org/doi/10.1504/ijcse.2021.113652
Realization of people density and smoke flow in buildings during fire accidents using raspberry and openCV	Sustainability	https://www.mdpi.com/2071-1050/13/19/11082
Distance based pattern driven mining for outlier detection in high dimensional big dataset	ACM Transactions on Management Information System (TMIS)	https://dl.acm.org/doi/10.1145/3469891
Cloud Server and Internet of Things Assisted System for Stress Monitoring	Electronics	https://www.mdpi.com/2079-9292/10/24/3133
Throughput Optimization-Based Gateways Placement Methods in Wireless Networks	International Journal of Computer Networks and Applications	https://ijcna.org/Manuscripts/IJCNA-2021-O-26.pdf
Statistical analysis and classifier accuracy improvements models for road accident issues on national highways in India	Design engineering	https://www.researchgate.net/profile/Sudhir-Chitnis/publication/354022068_Design_Engineering_Statistical_Analysis_and_Classifier_Accuracy_Improvements_Models_for_Road_Accident_Issues_on_National_Highways_in_India/links/611f486e169a1a010312481c/Design-Engineering-Statistical-Analysis-and-Classifer-Accuracy-Improvements-Models-for-Road-Accident-Issues-on-National-Highways-in-India.pdf
Handmade OK please: key criteria for purchasing craft items by Indian consumers	Journal of Cultural Heritage Management and Sustainable Development	https://www.emerald.com/insight/content/doi/10.1108/JCHMSD-04-2020-0063/full/html
Peculiar DNA partial threading intercalative ability of tetradentate copper complex based on ONO hydrazone backbone and an ancillary ligand	Nucleosides, Nucleotides & Nucleic Acids	https://www.tandfonline.com/doi/abs/10.1080/15257770.2021.1897839

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
Design, synthesis, antimicrobial evaluation, and molecular docking study of some 4-thiazolidinone derivatives containing pyridine and quinazoline moiety	Synthetic Communications	https://www.tandfonline.com/doi/abs/10.1080/00397911.2020.1861302?journalCode=lsyc20
In silico molecular docking studies of oxadiazole and pyrimidine bearing heterocyclic compounds as potential antimicrobial agents	Archiv der Pharmazie	https://onlinelibrary.wiley.com/doi/abs/10.1002/ardp.202100134
Quinazoline clubbed thiazole and 1, 3, 4-oxadiazole heterocycles: synthesis, characterization, antibacterial evaluation, and molecular docking studies	Phosphorus, Sulfur, and Silicon and the Related Elements	https://www.tandfonline.com/doi/abs/10.1080/10426507.2021.1871732
In silico Studies, Synthesis and Antitubercular Activity of Some Novel Quinoline-Azitinone Derivatives	Current Computer-Aided Drug Design	https://pubmed.ncbi.nlm.nih.gov/31995017/
Synthesis, Antimicrobial Capability and Molecular Docking of Heterocyclic Scaffolds Clubbed by 2-Azetidinone, Thiazole and Quinoline Derivatives	Polycyclic Aromatic Compounds	https://www.tandfonline.com/doi/abs/10.1080/10406638.2021.1877747
Conventional and microwave-assisted synthesis, antitubercular activity, and molecular docking studies of pyrazole and oxadiazole hybrids	ACS omega	https://pubmed.ncbi.nlm.nih.gov/34723024/
A copper-catalyzed synthesis of aryloxy-tethered symmetrical 1, 2, 3-triazoles as potential antifungal agents targeting 14 α -demethylase	New Journal of Chemistry	https://pubs.rsc.org/en/content/articlelanding/2021/nj/d1nj01759d/unauth
Design, Synthesis, Antibacterial Activity and in Silico Studies of Novel Quinolone Fused with Triazine, Thiadiazole and Oxadiazole Heterocycles	Polycyclic Aromatic Compounds	https://www.tandfonline.com/doi/abs/10.1080/10406638.2021.2009886
Synthesis, in vitro cytotoxicity, and molecular docking study of novel 3, 4 dihydroisoquinolin 1 (2 H) one based piperlongumine analogues	Journal of Heterocyclic Chemistry	https://onlinelibrary.wiley.com/doi/abs/10.1002/jhet.4264
Design, Synthesis, and the Effects of (E)-9-Oxo-octadec-10-en-12-ynoic Acid Analogues to Promote Glucose Uptake	ACS omega	https://pubs.acs.org/doi/full/10.1021/acsomega.1c03600
Synthesis and evaluation of antimycobacterial activity of riboflavin derivatives	Bioorganic & Medicinal Chemistry Letters	https://www.sciencedirect.com/science/article/abs/pii/S0960894X21004637

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
Room temperature ionic liquid promoted improved and rapid synthesis of highly functionalized imidazole and evaluation of their inhibitory activity against human cancer cells	Journal of the Chinese Chemical Society	https://onlinelibrary.wiley.com/doi/abs/10.1002/jccs.202000468
Synthesis and Molecular Docking Study of Arylsulfanyl Pyrazolylpyrazoline Derivatives as Antitubercular Agents	Russian Journal of Organic Chemistry	https://link.springer.com/article/10.1134/S107042802112023X
Synthesis and molecular docking study of pyrazole clubbed oxazole as antibacterial agents	Research on Chemical Intermediates	https://link.springer.com/article/10.1007/s11164-020-04286-6
[Et3NH][HSO4]-Catalyzed One-Pot Solvent Free Syntheses of Functionalized [1, 6]-Naphthyridines and Biological Evaluation	Polycyclic Aromatic Compounds	https://www.tandfonline.com/doi/abs/10.1080/10406638.2021.1970587
New 1, 2, 3-Triazole-Appended Bis-pyrazoles: Synthesis, Bioevaluation, and Molecular Docking	ACS omega	https://pubs.acs.org/doi/10.1021/acsomega.1c03734
[DBUH][OAc]-Catalyzed Domino Synthesis of Novel Benzimidazole Incorporated 3, 5-Bis (Arylidene)-4-Piperidones as Potential Antitubercular Agents	Polycyclic Aromatic Compounds	https://www.sciencedirect.com/org/science/article/abs/pii/S104066382200673X
Synthesis and Biological Evaluation of 2-(4, 5, 6, 7-Tetrahydrobenzo [c] Isoxazol-3-yl)-4 H-Chromen-4-Ones	Polycyclic Aromatic Compounds	https://www.tandfonline.com/doi/abs/10.1080/10406638.2021.1982733
Impact of social media influencers on customer engagement and brand perception	International Journal of Internet Marketing and Advertising	https://www.inderscience.com/info/inarticle.php?artid=114336
What Influences Business Travelers Behavioral Intentions Of Travel Booking: A Study Of The Bottlenecks Of Online Travel Portals	Geo Journal of Tourism and Geosites	http://gtg.webhost.uoradea.ro/PDF/GTG-3-2021/gtg.37326-728.pdf
Prognosis of COVID-19 Patients with machine learning techniques	Annals of the Romanian Society for Cell Biology	https://www.annalsofrscb.ro/index.php/journal/article/view/10004
HCI-ML Work In Wellbeing of Mental Health and Pilot Study to Detect Depression and Anxiety among Students during COVID	Design Engineering	https://ores.su/en/journals/design-engineering-toronto/
Ray Tracing Algorithm for Scene Generation in Simulation of Photonic Mixer Device Sensors	Machine Learning & Information Processing	https://link.springer.com/chapter/10.1007/978-981-33-4859-2_25
Quantum computing methods for supervised learning	Quantum Machine Intelligence	https://link.springer.com/article/10.1007/s42484-021-00050-0
Image Restoration using Recent Techniques: A Survey	Design Engineering	https://ores.su/en/journals/design-engineering-toronto/

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
To Explore How The Social, Economic, Educational Background Of Client's Impacts The Decision-Making Process.	Journal of Education: Rabindrabharati University	
Impact Of Interior Designer Of Residential Spaces With Respect To Income Groups In And Around Pune	The Journal of Oriental Research Madras	
Indian Railways Engineers Information Seeking Behaviour: Implementation of Leckie et al's Model and Study of their Awareness of Information	Industrial Engineering Journal	
Driver-Vehicle Interaction Analysis: Pilot Implementa- tion for Driver Behaviour Classification Using Smart- phone Sensor Data	Proceedings of the INTERACT2021 Conference on Human-Computer Interaction	
A Study on the Representation of Women on Corporate Boards in India Vis-à-vis the Global Scenario	PalArch's Journal of Archaeology of Egypt/ Egyptology	https://archives.palarch.nl/index.php/jae/article/view/8695
Assessment of TOC and TPM in Indian SME Auto Manufacturing Industries	Journal of Operations and Strategic Planning	https://journals.sagepub.com/doi/abs/10.1177/2516600X2111034605
Distance Aware Gateway Placement Optimization for Machine-to-Machine (M2M) Communication in IoT Network	Turkish Journal of Computer & Mathematics Education (TURCOMAT)	https://turcomat.org/index.php/turkbilmat/article/view/1804
Examining the role of celebrity credibility in the consumption of organic products in a developing nation: a pragmatic evidence from India	International Journal of Technology Transfer and Commercialisation	https://www.researchgate.net/profile/Omvir-Gautam-3/publication/356039423_Examining_the_role_of_celebrity_credibility_in_the_consumption_of_organic_products_in_a_developing_nation_pragmatic_evidence_from_India/links/618a3982d7d1af224bc9e978/Examining-the-role-of-celebrity-credibility-in-the-consumption-of-organic-products-in-a-developing-nation-pragmatic-evidence-from-India.pdf
A Novel Approach to Prevent Cloud Infrastructure against Cache Attacks	Research Square	https://www.researchsquare.com/article/rs-493941/v1
Machine learning in agriculture domain: A state-of-art survey	Artificial Intelligence in the Life Sciences	https://www.sciencedirect.com/science/article/pii/S2667318521000106
The Godhadi Art: Inspiration to develop new trends in Design	SPAST Abstracts	https://spast.org/techrep/article/view/3164
Electronic Health Record Using Blockchain And Off Chain Storage: A Systematic Review	Information Technology in Industry	https://it-in-industry.org/index.php/itii/article/view/125
An essential role of 'illustrative visuals' in contemporary Book-Publications of Maharashtra	Ajanta	

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
Implementing Theory of Constraints in an Indian SME: A Bearing Rings Manufacturing Machine Shop	Trends in Mechanical Engineering & Technology	
Dark Spot Identification using Clustering Techniques for Analysis and Classification of Cases of Molestation Against Women in Pune-India	American Council on Science & Education	
The MHD flow of liquid film in the presence of dissipation and thermal radiation through an unsteady stretching sheet by HAM	Turkish Journal of Computer & Mathematics Education (TURCOMAT)	https://www.proquest.com/openview/c61af86ace47b28b5ff169776c1999cc/1?pq-origsite=gscholar&cbl=2045096
A Review on Internal Design Modifications in Activated Sludge Process: Status, Impact and Recommendations	Advanced Materials Proceedings	https://amp.iaamonline.org/article_15996.html
Bionanocomposites for Biomedical Applications	Applications of Biodegradable and Bio-Based Polymers for Human Health and a Cleaner Environment	https://www.taylorfrancis.com/chapters/edit/10.1201/9781003146360-15/bionanocomposites-biomedical-applications-shrikaant-kulkarni
Private Cloud Configuration Using Amazon Web Services	Information and Communication Technology for Competitive Strategies (ICTCS 2020)	https://link.springer.com/chapter/10.1007/978-981-16-0882-7_75
Hydroponic Cultivation Approaches to Enhance the Contents of the Secondary Metabolites in Plants	Biotechnological Approaches to Enhance Plant Secondary Metabolites	https://www.taylorfrancis.com/chapters/edit/10.1201/9781003034957-5/hydroponic-cultivation-approaches-enhance-contents-secondary-metabolites-plants-yogesh-chandrakant-suryawanshi
Employees' Attitudes and Perceptions Towards Electronic Monitoring Surveillance Affecting Employee Behavior: An Exploratory Evidence From the Airline Industry	Critical Issues on Changing Dynamics in Employee Relations and Workforce Diversity	https://www.igi-global.com/chapter/employees-attitudes-and-perceptions-towards-electronic-monitoring-surveillance-affecting-employee-behavior/269359
Systematic Review of Resource Allocation Methods Using Scheduling for M2M (Machine to Machine Communication) in IoT Network	Security Issues and Privacy Threats in Smart Ubiquitous Computing	https://link.springer.com/chapter/10.1007/978-981-33-4996-4_13
Design and Analysis of Eddy Current Damper	2021 IEEE XVIIth International Conference on the Perspective Technologies and Methods in MEMS Design (MEMSTECH)	https://ieeexplore.ieee.org/abstract/document/9468009

TITLE OF PAPER	NAME OF JOURNAL	LINK TO ARTICLE/PAPER / ABSTRACT OF THE ARTICLE
Study on Manufacturing of High Purity thin Iron Foil	2021 IEEE XVIIth International Conference on the Perspective Technologies and Methods in MEMS Design (MEMSTECH)	https://ieeexplore.ieee.org/document/9467968
Analysis of user's learning styles and academic emotions through web usage mining	2021 International Conference on Emerging Smart Computing and Informatics (ESCI)	https://ieeexplore.ieee.org/document/9397037
IoT Device Classification Techniques and Traffic Analysis-A Review	2021 International Conference on Technological Advancements and Innovations (ICTAI)	https://ieeexplore.ieee.org/document/9673420
Heuristics of smartphones and tablets to identify human factors for improving user experience	HWWE2021	https://link.springer.com/chapter/10.1007/978-3-030-94277-9_96
Workload assessment methods on Train Station Control Room	HWWE2021	https://link.springer.com/chapter/10.1007/978-3-030-94277-9_110
Workforce Diversity to Foster an Innovation	Critical Issues on Changing Dynamics in Employee Relations and Workforce Diversity	https://www.igi-global.com/chapter/workforce-diversity-to-foster-an-innovation/269356
Optimizing Agricultural to Hydro power water transfer	IOP Conference Series: Materials Science and Engineering Technologies and Methods in MEMS Design (MEMSTECH)	https://iopscience.iop.org/article/10.1088/1757-899X/1149/1/012023

<https://research.vupune.ac.in/2021>

Transforming Ideas into Reality

In the process of transforming ideas into reality, Vishwakarma University inculcates the aspect of innovation right from the entry of a student to the university. Patents have been filed in 2019 as a result of the creative and innovative ideas of the students and faculty.

NAME OF THE PATENT	PATENT APPLICATION NUMBER
Vertical Sewage Treatment Plant	202121043909
The Modified Aerobic Reactor in Vertical Sewage Treatment Plant	202121043910
The Novel Anaerobic System in Vertical Sewage Treatment Plant	202121043877
Freeze Concentration Technology in Vertical Sewage Treatment Plant	202121043907
A Method of Optimization to Minimize Combined Volume of Aerobic and Anaerobic Reactor	202121044823
Design of miniaturized Energy Harvester for Human Shoe Application	202221003245
A Potable Water Treatment and Dispensing System	202221032499

NAME OF THE PATENT	PATENT APPLICATION NUMBER
A System For Cooling and Heating Water in a Household Water Purification and Dispensing System	202221032498
An Automated Implantable Cardiac Monitoring Device For Detecting Arrhythmia	202221032500

<https://research.vupune.ac.in/patent>

Innovation in Arts

VU facilitates the promotion of arts and the appropriate use of design principles, technology capabilities, commercial essentials, social factors, and ethical practices in the field of art are at the core of the University's efforts.

To nurture natural curiosities, passions and penchant towards arts and culture, VU has started an interactive forum to engage artisans and craftsman with students. The artisans with rich experiences are invited to the campus for interactions, to showcase their art, and introduce students with techniques of traditional artwork.

The students also get an opportunity to work on live projects with industry partners under the "Industry on Campus" initiative. The students and faculty work closely on the not-for-profit social initiatives like educational paintings and drawings on a kindergarten school building walls in association with ProCluster Business Association – a techno-social NGO. The goal is to develop learning interest among children from deprived communities.

Students work on national and international projects for the public good and benefit from entrepreneurial opportunities. VU promotes the use of sustainable materials through the Eco-Campus initiative and collaborations with local artisans. The material used and promoted so far in the artefacts and designs includes Bamboo, Cloth, Wood, etc. with the emphasis to upcycle the use of materials available locally. The Department of Art works closely with the Department of Design, School of Technology, and other schools within VU like the Commerce and Management, Humanities and Social Sciences; Journalism and Mass Communication, etc. The artisans with rich experience come to the campus for interactions, to showcase their art, and introduce students to techniques of traditional artwork. VU organizes annual events to showcase and commercialize the handmade work of the students and they also get to work on live projects with industry partners under the "Industry on Campus" initiative. The external collaborations with local enterprises, global firms, professional bodies, and foreign universities have helped to promote art.

<https://www.vupune.ac.in/department-of-design>

<https://www.vupune.ac.in/department-of-animation>

Faculty of Art and Design of Vishwakarma University filed following designs:

NAME OF THE DESIGN	DESIGN NUMBER
RED BIN-Wet Waste Collector	336337 - 001
Dispenser	336334 - 001
Momento - the Spire of Sustainable Education	336335 - 001
Momento - University in Diversity	336336 - 001

<https://research.vupune.ac.in/design>

VU IQube (The Idea, Innovation and Impact Centre)

As beautifully encapsulated in its motto - maximizing human potential, VU, since its inception, has worked endlessly towards creating an enabling environment to ensure the wholesome development of its students. Employing innovative learning methodologies has created an effective amalgamation of didactic and practical learning. This coupled with a responsive and active student community has made the VU campus a productive ground for the germination of new ideas and intellectual activity. Now VU has taken the next natural step in its journey of academic excellence by launching VU IQube, on the 1st of October, 2020, to unleash the creative potential of its students.

Focusing on Idea, Innovation, IPR, and Entrepreneurship in a synergetic and integrated way VU IQube seeks to facilitate the culture of innovation in VU and to build an Eco-system that enables self-empowerment.

Initiatives

1. The Impactful Innovation Project: Under this Initiative VU IQube has established an SOP for the submission, screening, selection, and processing of the ideas, inventions, and innovations of the students. Students are invited to submit their Ideas, Innovations, and Inventions. These go through the process of screening by the expert committee constituted for the same. Selected Proposals are taken up for nurturing which includes, inter alia incubation, IPR facilitation, and entrepreneurship support required to bring the respective projects to fruition.
2. Faculty IPR Facilitation Programme: Under this initiative, the faculty are provided with drafting, filing, and financial support for IPR registration and processing for their eligible projects.
3. Faculty Capacity Building Programme: The Faculty are provided exposure to training and workshops that build their capacities in the areas of IPR, Innovation, and Entrepreneurship.
4. Student Capacity Building Programme: Under this, through sessions, workshops, Elective Courses, etc., the capacity of students to better understand and manoeuvre within the landscape of IPR, Innovation, and Entrepreneurship is inculcated

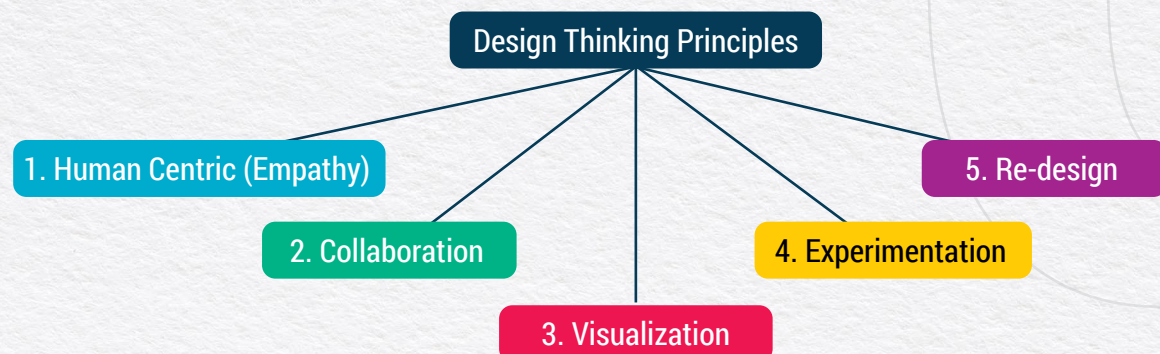
<https://www.vupune.ac.in/centres-of-excellence/vu-iqube>

Design Thinking and Innovation

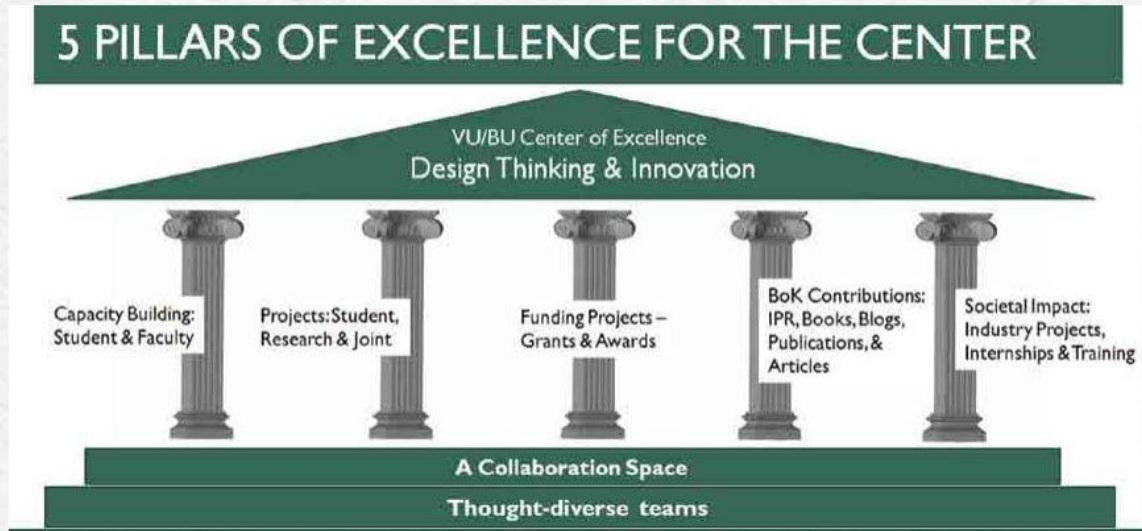
The aim is to collaboratively develop an eco-system for seeding and nurturing a spirit of curiosity, logical thinking, ideation, design thinking, creativity, innovation, collaboration and social awareness to facilitate the transformation of ideas of students and faculty to techno-commercially viable and relevant projects useful for society that enable the betterment of humankind.

Principles for Design Thinking

The VU/BU Design Thinking Principles - There are five core principles.



Mission for Design Thinking and Innovation - We transform ideas into innovations using our VU/BU Design Thinking & Innovation process in order to make the world a better place
Goals Build our brand and contribute to the betterment of society by applying and expanding the Design Thinking & Innovation body of knowledge.



NAME OF THE COPYRIGHTS	COPYRIGHT APPLICANT NAMES	STATU
Design Thinking Process	Prof. Dr. Kailas R. Patil	Registered

<https://www.vupune.ac.in/centres-of-excellence/centre-of-excellence-for-design-thinking-and-innovation>

<https://research.vupune.ac.in/copyrightinnovation>



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