

Format for (Faculty CV)

1. Personal Information

- **Name:** Dr. Shirish Nanaji Gandhare
- **Position:** Assistant Professor, (Visiting Faculty)
- **Department:** Department of Mechanical Engineering
- **Contact Information:** **Mobile:** +91-9673992174; +91-9284367224
Email: gandhare.shirish@gmail.com,
gandhareshirish@sggs.ac.in
LinkedIn: [linkedin.com/in/shirish-n-gandhare-70469980](https://www.linkedin.com/in/shirish-n-gandhare-70469980)
Address: Department of Mechanical Engineering,
SGGS I E & T, Nanded

2. Educational Background

Degrees:

- Ph.D. in Mechanical Engineering, VIT- VGU, Jaipur (Rajasthan), 2020-2024 (Completion: 2020-2024)(CGPA - 8.2)
- Master of Technology (Industrial Engineering), Shri Ramdeobaba College of Engineering & Management, Nagpur (M.S.), 2008-2010 (70.04%)
- Bachelor of Engineering (Production Engineering), Bapurao Deshmukh College of Engineering, Sevagram, Wardha (M.S.), 2003-2007 (61.75%)

Postdoctoral Experience: Nil

Certifications: Diploma In CAD/CAM, NPTEL Certifications in 1. Mechanical Operations, 2. Industrial Safety Engineering 3. Environmental Studies. 4. Innovation, IPR, Entrepreneurship, and Start-ups among HEIs under MHRD for One month course.

3. Research Interests

- **Areas of Expertise:**
 - Failure Mode and Effect Analysis (FMEA)
 - Industrial Engineering
 - Industry 4.0
 - Machining Processes
- **Ongoing Projects:** Nil
- **Interdisciplinary Work:**
 - Healthcare & Engineering: Developed a maintenance framework for medical equipment using FMEA, integrating mechanical engineering and healthcare. Led the development of a device to stimulate cervix opening for biomedical applications.
 - Industry 4.0 & Smart Manufacturing: Conducted research on predictive maintenance and automation in medical equipment using Industry 4.0 principles. Taught subjects on IoT, cyber-physical systems, and smart manufacturing.
 - Sustainability & Renewable Energy: Specialized in green manufacturing and sustainability, aligning mechanical engineering with environmental science. Provided consultancy on process optimization and energy-efficient manufacturing.

- Computational & Data Science Applications: Applied statistical analysis and data visualization in research, particularly for predictive maintenance. Published books integrating Industry 4.0, data analytics, and smart manufacturing concepts.

4. Teaching Experience

- **Courses Taught:** Taught subjects like Introduction to Industry 4.0, Internet of things, Design of Machine Elements, Green Manufacturing and Sustainability, Manufacturing and Machining Processes, along with Computer Applications which are crucial for the advanced requirements manufacturing industry over last 16 Years.
- **Course Development:**
 - Metrology and Instrumentation
 - Manufacturing Processes

5. Publications and Presentations

- **Books:**
 - Published Book “ Basics and Introduction to Industry 4.0: Elements and Application” ASIN : B0DQP6ZKGK
Publisher : Notion Press (16 December 2024)
Language : English
Paperback : 178 pages
ISBN-13 : 979-8896730323
 - Published Book “Advanced Data Management” under Lambert Publications
ISBN :978-93-5833-234-6
 - Book Chapter, “Womens Empowerment Has Emerged as a Powerful Force within Homes, Society, and the Nation: An Unstoppable Revolution.” for the book Women’s Empowerment for a Sustainable Future, with CRC press, AAP publication, Taylor & Francis group.
- **Journal Articles:**

SCOPUS-Indexed:

- “Development and validation of a FMEA-based medical equipment maintenance framework using Industry 4.0,” Gandhare, Shirish; Kumar, Pramod; Madankar, Tarachand; et al., The International journal of quality & reliability management, 04 Mar 2025, ISSN: 0265671X, DOI: 10.1108/IJQRM-07-2024-0246, Emerald; EMERALD GROUP PUBLISHING LIMITED
<https://www.emerald.com/insight/content/doi/10.1108/ijqrm-07-2024-0246/full/html>
- S. Gandhare, S. Narad, P. Kumar and T. Madankar, "Integrating Quantitative Parameters for Automating Medical Equipment Maintenance Using Industry 4.0 and FMEA," 2024 2nd DMIHER International Conference on Artificial Intelligence in Healthcare, Education and Industry (IDICAIEI), Wardha, India, 2024, pp. 1-6, doi: 10.1109/IDICAIEI61867.2024.10842797.
<https://ieeexplore.ieee.org/document/10842797>
- Title: “Maintenance of Medical Equipment Using Failure Modes and Effect Analysis: A Review.” <http://wthtjsjs.cn/gallery/37-whjj-january-5939.pdf>
- Title: “A Case Study on comparison of health care development before and after implementation of mission ‘Swachh Bharat Abhiyan’ by Municipal Corporation intended for Wardha city.”
<https://scholar.google.com/scholar?oi=bibs&hl=en&cites=9513436095964387468>

- Title: "Failure analysis of helical coil spring in automobile system using finite element method"
<https://scholar.google.com/scholar?oi=bibs&hl=en&cites=16941764980320959799>

Web of Science:

- Title: "Scope for design & development of 2r edge trimming mechanism & tool adjustment."
<https://scholar.google.com/scholar?oi=bibs&hl=en&cites=1001672164343797511>
- Title: "Re-Scheduling Of Maintenance Task For Diesel Locomotive (Zdm) Maintenance Work Using FMEA Technique -An Industrial Engineering Approach For Saving The Resources."
<https://scholar.google.com/scholar?oi=bibs&hl=en&cites=3940794834187285486>

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UGC care:

- Title: "Analytical Calculations for Design Optimization of Stirrer Shaft of Butter Extraction Machine."
https://scholar.google.com/citations?view_op=view_citation&hl=en&user=axjomCcAAAAJ
- Title: "Study of Failure Maintenance Task for Diesel Locomotive (ZDM) Maintenance Work." Offline Journal
- Title: "Finding Scope for Implementing Correct Strategy for Maintenance of Medical Equipment Using Failure Database."
<https://www.ijsr.net/getabstract.php?paperid=SR23624095142>

• Conference Papers:

- "Integrating Quantitative Parameters for Automating Medical Equipment Maintenance Using Industry 4.0 and FMEA." IEEE sponsored conference IDICAIEI, 2024
- Title: "Finding Scope for Implementing Correct Strategy for Maintenance of Medical Equipment Using Failure Database." For IEEE conference CONIT'2022 on 22 June, 2022 at Hubali.
- Title: "Study of Maintenance Practices intended for Essential Medical Equipment at hospitals during Pandemic." International Conference on Industrial Engineering and Management (ICIEM-2021) MNIT, Jaipur, 17th -19th Dec 2021.
- Title: "Study of Maintenance Practices intended for Essential Medical Equipment at Rural hospitals." At VIT, Jaipur on 29th -30th November, 2021.
- Title: "Maintenance of Medical Equipment using Failure mode and Effect Analysis." For Conference CESDO-2021 (Conference on Engineering Systems Design and Optimization) on 26th and 27th March 2021 at G H Raison College of Engineering, Ahamadnagar.
- Title: "Comparison sanitation & health care after implementation Swatch Bharat Abhiyan." On 18th – 19th January 2019, at VNIT, Nagpur.
- Title: "Performance analysis of parallel uniform rectangular fin and cylindrical pin fin with Al alloy and Cu alloy for heat sink application." IEEE sponsored 3rd International Conference for Convergence in Technology (I2CT) held at JW Marriot, Pune on 6th-8th April 2018.
- Title: "Rescheduling of Maintenance task of medical equipment using FMEA." IEEE National Conference on advances in Engineering, Technology and applied Science, at YCCE, Nagpur on 16th -17th March 2018.
- Title: "Maintenance scheduling of medical equipment using DBMS and FMEA." For International Conference Transforming Lives & Healthcare through

Technology (TLHTicon-2017) at DMIHER (formerly DMIMS) (DU), Sawangi (M), Wardha on 9th - 10th January 2017.

- Title: “Finding scope for Deferment of Maintenance Task for Indian railway.” International conference ICTIME-2016 held at Maulana Azad National Institute of Technology, Bhopal on 4th – 6th Feb2016.
- Title: “Comparison and Determination of Safety Environment for small Scale Industries using Various Parameters -An Industrial Engineering Approach.” in 2nd International Conference on Advances in Engineering & Technology, ICAET’2015 at Anjuman College of Engineering, Nagpur on 25th& 26th February’2015.
- Title: “Rescheduling of maintenance task for diesel locomotive maintenance work using FMEA Technique.” in International Conference on Advances in Engineering & Technology, ICAET’2014 at Anjuman College of Engineering, Nagpur on 8th & 9th January’2014.
- Title: “Ergonomic evaluation of Body poster of worker working in SSI.” For 2nd MGI International Conference on Recent Trends & Innovation in Engineering and Technology- 2014 at DMIETR in association with Indo-US Collaboration for Engineering Education, Northern Ilion’s University USA and ISTE 19th -20th December 2014
- Title: “Finding Scope for Rescheduling of Maintenance Task for MSRTC Bus Maintenance Work-An Industrial Engineering Approach” in National Conference on Innovative Trends & Technology Developments, TECHNOCON’2013 at DMIETR, Sawangi (M), Wardha on 17 December’2013.
- Title: “Implementation of FMEA on Maintenance Task for Diesel Locomotive Maintenance Work.” At the Institute of Engineers (India), in National Seminar Program Quality Progress’2012 on 25th& 26th February’ 2012.
- Title: 51st National Convention of Industrial Engg. & National Seminar on Productivity Safety & Disaster Management in Association with IIIE on 04-05 December’2009 at Shri Ramdeobaba Kamla Nehru College Of Engineering, Nagpur.

- **Editorial Work:**

- Reviewer for Journal Industrial Engineering, ISSN Online: 2640-1118
ISSN Print: 2640-110X <http://www.sciencepg.com/journal/ie>
Journal of Industrial Engineering Science (Science Publishing Group)
- Awarded Four copyrights for Laboratory Manuals and Projects related to Manufacturing Process and Mechanical Engineering along with Computer Applications based Subject.

6. Awards and Honors

- **Grants:**

- Received Rs. 2.5 Lakh grant for Entrepreneurship Development under startup “Cattle food Generating Machine.”
- Recognized DMIETR as Host Institute for Incubation & Innovation Cell (BI).
- Granted Patent (Application No: 201921007690) for "A Shelling Apparatus" in Mechanical Engineering.

- **Awards:**

- Presented prototype “Tooth Vitality Monitoring.” at IIT Bombay at MEDIC Biomedical Campaign and secured Innovation award.
- Won best prototype award for, “Development of a device to Stimulate Cervix Opening during Parturition” for MEDHA’ 2024 at BiONEST project of DST at DMIHER and presented at IIT, Bombay.
- Best Teacher Award with Appreciation, on teachers Day -2016.

- **Fellowships:** NIL

7. Professional Experience

- **Administrative Roles:**

- Coordinated BETIC at DMIMS and participated in R&D initiatives for agricultural development.
- Member of Institution’s Innovation Council (IIC) established under MHRD’s Innovation Cell.
- Managed Incubation & Innovation Cell as Incubation Manager at DMIETR.
- Coordinated MSME proposals for Entrepreneurship Development Cell.
- Actively contributed to R&D cell at the institution and national accreditation boards.
- Mentored undergraduate students, enhancing the quality of their research work.
- Conducted sessions to inspire research, innovation, and entrepreneurship among students.
- Organized institute-level competitions, guest lectures, workshops, and industrial tours.

- **Industry Collaboration:**

- Worked as Collaborative Engineer for Umed Abhiyan, District Mission Management Unit, Jilha Parishad, Wardha (Initiative by Govt. Maharashtra) in association Vishwakrama Industries, Milan Chowk, Chitra Cinema, Ganjipeth, Nagpur for Machine Design for Bakery Products on 19/12/2020.

- **Consulting Work:**

- Worked as consultant Engineer for 2R Edge Mechanism for Ramakrishna Industries, Nagpur in May 2016.

8. Supervision and Mentoring

- PhD/Master's Supervision: NIL
(**PG Project under the Guidance:**
 - Failure analysis of helical coil spring in an Automobile system by Finite Element Method.
 - Design optimization of stirrer shaft of butter extraction machine.)

9. Professional Memberships

- **Associations:**
 - Associate Member, IIIE (Indian Institute of Industrial Engineering) (LAM-9265)
 - Member, International Association of Engineers (IAENG) (ID-143826)

10. Miscellaneous

- **Languages:** English
- **Skills:** Predictive Maintenance framework Development, CAD (SolidWorks, AutoCAD, Fusion 360), FMEA, Industry 4.0, smart manufacturing, IoT, IIoT, Cyber-physical systems, Digitalization, Medical equipment maintenance, sustainability, green manufacturing, R programming, C language, Python Programming, Data analytics, Research writing, project management, leadership.
- **Personal Interests:** Writing Blogs, Marathi Poems, Playing with kids.