



## **Dr. Ankush Raina**

**Assistant Professor**  
School of Mechanical  
Engineering,  
Faculty of Engineering,  
Shri Mata Vaishno Devi  
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Katra, Jammu-182320.  
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## **Carrier Achievements**

M. Tech. Gold Medalist.  
GATE Qualified.

## **Personal Details**

Father's Name :  
Suraj Parkash  
D.O.B.: Nov-01-1988  
Nationality: Indian  
Marital Status: Married  
Languages known: Hindi,  
English, Dogri.

## **Objective**

Contribution towards continuous learning and creativity, by providing exposure to new ideas that stimulates personal as well as professional growth.

## **Areas of Interest**

- ✓ Nano-lubrication
- ✓ Rheology of Lubricating oils
- ✓ 3D Printing
- ✓ Aerodynamics
- ✓ Fluids Engineering

## **Research Experience**

- ✎ Working in the field of lubricating oils used in Mechanical Industry. Performed different studies on the evaluation of their rheological and tribological properties.
- ✎ Guided M. Tech. students wherein different studies were performed to evaluate the nano lubrication characteristics of vegetable oils and synthetic oils.
- ✎ Involved in evaluation of mechanical and tribological characteristics of Aluminum metal matrix composites. Also, performed different studies in the field of Additive manufacturing.
- ✎ Also, working in the field of external aerodynamics using passive flow control devices. Developed correlation for results obtained from aerodynamic simulations with experimental data.
- ✎ Presented several papers in national and international conferences in India and abroad. Published nearly 25 articles in SCI/SCIE/Scopus indexed journals

## **Academic Experience**

### **2015 – Present / SMVD University**

Working as an Assistant Professor from January, 2015 to till date, in the School of Mechanical Engineering.

### **2013 – 2014 / NIT Jalandhar**

Worked as an Assistant Professor in the Department of Mechanical Engineering from September, 2013 to December, 2014.

### Academic Qualifications:

Examination	Name of the Board/University	Year of Passing	Marks (%/CGPA)	Subject/ Specialisation
Secondary	JK-BOSE	2004	85.8 %	-
Higher Secondary	JK-BOSE	2006	78.5 %	Non-Medical
B.E.	Jammu University	2010	68 %	Mechanical Engineering
M. Tech.	NIT Srinagar	2013	8.9	Mechanical System Design
Ph.D.	SMVD University	2020	-	Mechanical Engineering

### Subjects Taught

- ❖ Fluid Mechanics (UG)
- ❖ Fluid Machines (UG)
- ❖ Theory of Machines (UG)
- ❖ Dynamics of Machines (UG)
- ❖ Heat Transfer (UG)
- ❖ Transport Process – I (UG)
- ❖ Metal Forming Technology (PG)
- ❖ Advanced Fluid Mechanics (PG)

### Research Publications (SCI/SCIE Indexed)

1. Aziz, R., Haq, M. I. U., & Raina, A. (2020). Effect of surface texturing on friction behaviour of 3D printed polylactic acid (PLA). *Polymer Testing*, 85, 106434. <https://doi.org/10.1016/j.polymertesting.2020.106434> **IF-2.94**
2. Gupta, A., Mohan, S., Anand, A., Haq, M. I. U., Raina, A., Kumar, R. & Kamal, M. (2019). Tribological behaviour of Fe–C–Ni self-lubricating composites with WS<sub>2</sub> solid lubricant. *Materials Research Express*, 6(12), 126507 <https://doi.org/10.1088/2053-1591/ab52d2> **IF-1.449**
3. Singh, H., Haq, M. I. U., & Raina, A. (2019). Dry Sliding Friction and Wear Behaviour of AA6082-TiB<sub>2</sub> in Situ Composites. *Silicon*, 1-11. <https://doi.org/10.1007/s12633-019-00237-y> **IF-1.21**
4. Kerni, L., Raina, A., & Haq, M. I. U. (2019). Friction and wear performance of olive oil containing nanoparticles in boundary and mixed lubrication regimes. *Wear*, 426, 819-827. <https://doi.org/10.1016/j.wear.2019.01.022> **IF-2.95**

5. Shafi WK, Raina A, Haq MI. (2019). Performance evaluation of Hazelnut oil with copper nanoparticles - A new entrant for sustainable lubrication. *Industrial Lubrication and Tribology* [https:// doi: 10.1108/ILT-07-2018-0257](https://doi.org/10.1108/ILT-07-2018-0257) **IF-1.03**
6. Raina, A., & Anand, A. (2018). Influence of surface roughness and nanoparticles concentration on the friction and wear characteristics of PAO base oil. *Materials Research Express*, 5(9), 1-13. <https://doi.org/10.1088/2053-1591/aad764> **IF-1.449**
7. Raina, A., & Anand, A. (2018). Effect of nanodiamond on friction and wear behavior of metal dichalcogenides in synthetic oil. *Applied Nanoscience*, 8(4), 581-591. <https://doi.org/10.1007/s13204-018-0695-y> **IF 3.198**
8. Shafi WK, Raina A, Haq MI. (2018). Tribological performance of avocado oil containing copper nanoparticles in mixed and boundary lubrication regime. *Industrial Lubrication and Tribology*, 70 (5), 865-871. [https:// doi:10.1108/ILT-06-2017-0166](https://doi.org/10.1108/ILT-06-2017-0166) **IF-1.03**
9. Raina, A., & Anand, A. (2017). Tribological investigation of diamond nanoparticles for steel/steel contacts in boundary lubrication regime. *Applied Nanoscience*, 7(7), 371-388. [https:// DOI 10.1007/s13204-017-0590-y](https://doi.org/10.1007/s13204-017-0590-y) **IF 3.198**
10. Singh, N., Mir, I. U. H., Raina, A., Anand, A., Kumar, V., Sharma, S. M. (2017). Synthesis and tribological investigation of Al-SiC based nano hybrid composite. *Alexandria Engineering Journal*, 57, 1323–1330 <https://doi.org/10.1016/j.aej.2017.05.008> **IF 3.696**
11. Raina, A., Harmain, G. A., & Haq, M. I. U. (2017). Numerical investigation of flow around a 3D bluff body using deflector plate. *International Journal of Mechanical Sciences*, 131, 701-711. <https://doi.org/10.1016/j.ijmecsci.2017.08.018> **IF 4.134**

### Research Publications (Scopus Indexed)

- 1 Baba, Z. U., Shafi, W. K., Haq, M. I. U., & Raina, A. (2019.) Towards sustainable automobiles-advancements and challenges. *Progress in Industrial Ecology – An International Journal*, 13(4) <https://doi.org/10.1504/PIE.2019.10023629>
- 2 Gupta, S., Haq, M. I. U., Mohan, S., Anand, A., Raina, A., Dutta, V. & Kumar, R. (2019). “Evaluation of mechanical properties of ramie/banana reinforced hybrid composites” *Journal of Mechanical Engineering*, Vol. SI 8, page no., 31 Dec. 2019.
- 3 Khajuria, A., Akhtar, M., Pandey, M. K., Singh, M. P., Raina, A., Bedi, R., & Singh, B. (2019). Influence of ceramic Al<sub>2</sub>O<sub>3</sub> particulates on performance measures and surface characteristics during sinker EDM of stir cast AMMCs. *World Journal of Engineering*. <https://doi.org/10.1108/WJE-01-2019-0015> (In Press)
- 4 Chadha, A., Haq, M. I. U., Raina, A., Singh, R. R., Penumarti, N. B., & Bishnoi, M. S. (2019). Effect of fused deposition modelling process parameters on mechanical properties of 3D printed parts. *World Journal of Engineering*. <https://doi.org/10.1108/WJE-09-2018-0329> (In Press)
- 5 Kumar, R., Ul Haq, M. I., Raina, A., & Anand, A. (2018). Industrial applications of natural fibre-reinforced polymer composites—challenges and opportunities. *International Journal of Sustainable Engineering*, 1-9. <https://doi.org/10.1080/19397038.2018.1538267>

- 6 Haq MI, Raina A, Vohra K, Kumar R, & Anand A. (2018). An Assessment of Tribological Characteristics of Different Materials under Sea Water Environment. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2017.11.610>
- 7 Shafi, W. K., Raina, A., & Ul Haq, M. I. (2018). Friction and wear characteristics of vegetable oils using nanoparticles for sustainable lubrication. *Tribology-Materials, Surfaces & Interfaces*, 12(1), 27-43. <https://doi.org/10.1080/17515831.2018.1435343>
- 8 Anand, A., Haq, M. I. U., Vohra, K., Raina, A., & Wani, M. F. (2017). Role of Green Tribology in Sustainability of Mechanical Systems: A State of the Art Survey. *Materials Today: Proceedings*, 4(2), 3659-3665. <https://doi.org/10.1016/j.matpr.2017.02.259>
- 9 Anand, A., Haq, M. I. U., Raina, A., Vohra, K., Kumar, R., & Sharma, S. M. (2017). Natural Systems and Tribology-Analogies and Lessons. *Materials Today: Proceedings*, 4(4), 5228-5232. <https://doi.org/10.1016/j.matpr.2017.05.031>
- 10 Anand, A., Vohra, K., Ul Haq, M. I., Raina, A., & Wani, M. F. (2016). Tribological Considerations of Cutting Fluids in Machining Environment: A Review. *Tribology in Industry*, 38(4).
- 11 Gupta, G., Kumar, P., Raina, A., & Haq, M. I. U. (2018, August). Effect of SiC reinforcement on mechanical behavior of aluminum alloys–A review. In AIP Conference Proceedings (Vol. 2006, No. 1, p. 030051). AIP Publishing. <https://doi.org/10.1063/1.5051307>
- 12 Slathia, S., Haq, M. I. U., & Raina, A. (2018, August). Fabrication and mechanical characterization of AA2024-ZrO<sub>2</sub>-Gr hybrid composite. In AIP Conference Proceedings (Vol. 2006, No. 1, p. 030047). AIP Publishing. <https://doi.org/10.1063/1.5051303>
- 13 Singh, H., Raina, A., & Haq, M. I. U. (2018). Effect of TiB<sub>2</sub> on Mechanical and Tribological Properties of Aluminium Alloys–A Review. *Materials Today: Proceedings*, 5(9), 17982-17988. <https://doi.org/10.1016/j.matpr.2018.06.130>
- 14 Raina, A., & Anand, A. (2018). Lubrication performance of synthetic oil mixed with diamond nanoparticles: Effect of concentration. *Materials Today: Proceedings*, 5(9), 20588-20594. <https://doi.org/10.1016/j.matpr.2018.06.438>
- 15 Kerni, L., Raina, A., & Haq, M. I. U. (2018). Performance evaluation of aluminium alloys for piston and cylinder applications. *Materials Today: Proceedings*, 5(9), 18170-18175. <https://doi.org/10.1016/j.matpr.2018.06.153>

### International Conferences (Papers Presented)

1. Ankush Raina and Ankush Anand, “Friction and wear behavior of 3D printed polymer composites”, *6<sup>th</sup> International Conference on Recent Trends and Advancements in Engineering and Technology (ICRTAET-2020)* Shri Mata Vaishno Devi University Katra, India, January, 17-18, 2020.
2. Ankush Raina and Ankush Anand, “Lubrication Characteristics of Oils containing Nano additives” *6<sup>th</sup> International Conference on Advance Materials and Nanotechnology (ICANN-2019)*, IIT Guwahati, December, 18-21, 2019.

3. Ankush Raina and Ankush Anand, "Nano diamonds as Additives with Superior Lubrication Properties" *International conference on Advancement in Engineering Sciences (AES2019)*, SMVD University, Katra, September 28-29, 2019.
4. Love Kerni, Ankush Raina and Mir Irfan Ul Haq, "Friction and wear performance of olive oil containing nanoparticles in boundary and mixed lubrication regimes" *22<sup>nd</sup> International Conference on Wear of Materials*, Miami, Florida, USA, April 14-18, 2019.
5. Ankush Raina, Ankush Anand, Mir Irfan Ul Haq and Sanjay Mohan Sharma "Friction and wear characteristics of diamond nanoparticles mixed with copper oxide for steel/Al alloy contacts" *22<sup>nd</sup> International Conference on Wear of Materials*, Miami, Florida, USA, April 14-18, 2019.
6. Ankush Raina and Ankush Anand, "Lubrication Performance of synthetic oil mixed with diamond nanoparticles: Effect of concentration", *8th International Conference on Materials Processing and Characterisation (ICMPC-2018)*, GRIET Hyderabad, India, March, 16-18, 2018.
7. Love Kerni, Ankush Raina and Mir Irfan Ul Haq, "Performance evaluation of aluminium alloys for piston and cylinder applications", *8th International conference on Materials Processing and Characterisation (ICMPC-2018)*, GRIET Hyderabad, India, March, 16-18, 2018.
8. Ankush Raina and Ankush Anand, "Friction and wear characteristics of diamond nanoparticles in PAO base oil", *International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN: 3I-2017)*, IIT Roorkee, Uttarakhand, India, December, 06 - 08, 2017.
9. Ankush Raina, "Flow control around a 3D-bluff body using passive device". *4<sup>th</sup> International Conference on Recent Trends and Advancements in Engineering and Technology (ICRTAET-2017)* Shri Mata Vaishno Devi University Katra, India, November, 03-04, 2017.
10. Ankush Raina and Ankush Anand, "A study on the friction and wear behaviour of different mechanical components", *4<sup>th</sup> International Conference on Recent Trends and Advancements in Engineering and Technology (ICRTAET-2017)* Shri Mata Vaishno Devi University Katra, India, November, 03-04, 2017.
11. Wani Khalid Shafi, Ankush Raina and Mir Irfan Ul Haq, "Recent advancements in Tribology : A Review", *International Conference on Renewable Energy for Sustainable Environment Challenges and Remedies (ICRESE-2017)* Shri Mata Vaishno Devi University Katra, India, March, 20-21, 2017.

### National Conferences (Papers Presented)

1. Ankush Raina and Ankush Anand, "Drag reduction of road vehicles using active flow control devices", *2<sup>nd</sup> National Conference on Innovative Trends in Mechanical Engineering (NCITME-2018)*, Shri Mata Vaishno Devi University Katra, India, March, 23-24, 2018.
2. Ankush Raina and Love Kerni "Nano-Lubrication for Automotive Applications" *National Conference on Emerging Trends in Materials Science (NCETMS-2018)*, Shri Mata Vaishno Devi University Katra, India, February, 7-8, 2018.

3. Ankush Raina and Ankush Anand, "Performance evaluation of bio oils using nano materials for sustainable lubrication" *National Conference on Emerging Trends in Materials Science (NCETMS-2018)*, Shri Mata Vaishno Devi University Katra, India, February, 7-8, 2018.
4. Ankush Raina, Sanjay Mohan Sharma, Rajiv Kumar and Ankush Anand, "Lubrication characteristics of plant products for sustainable development" *National Conference for Interdisciplinary Aspects of Plant Sciences (NCAPSI-2017)*" 27th APSI Scientist Meet, Shri Mata Vaishno Devi University Katra, India, November, 2-4, 2017.
5. Ankush Raina, Wani Khalid Shafi and Mir Irfan Ul Haq, "Lubrication characteristics of avocado oil containing copper nanoparticles" *National Conference for Interdisciplinary Aspects of Plant Sciences (NCAPSI-2017)*" 27th APSI Scientist Meet, Shri Mata Vaishno Devi University Katra, India, November, 2-4, 2017.
6. Ankush Raina, Akhil Khajuria and Rabinder Singh Bharj, "Assesment of Cryogenic Grinding using Liquid Nitrogen as a Coolant" *National Conference on Mechanical Engineering (NCME -2014)*, University Institute Of Engineering & Technology, Hoshiarpur, Punjab India, November, 07-08, 2014.

#### Workshops, Courses, Faculty Development Program (Attended)

1. Faculty Development Program on "Engineering Optimization " organized by *School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra* from September 25-29, 2018
2. International Symposium on "Tribology for Sustainability" organized by *NIT Srinagar and National School of Engineering, Sfax, Tunisia* from June 17-21, 2019.
3. Workshop on "Professional Ethics and Human Values" conducted by Faculty development Centre *Shri Mata Vaishno Devi University, Katra* from March 11-15, 2019.
4. Workshop on "Advances in Clean energy conversion technologies and materials for energy storage applications" conducted by the School of Mechanical engineering, *Shri Mata Vaishno Devi University, Katra* from January 24-25, 2019.
5. FDP on "Best Manufacturing Practices" in Industries organized by the school of Mechanical engineering, *Shri Mata Vaishno Devi University, Katra* from December 17-21, 2018.
6. TEQIP-III Summer Training Program on "Active Learning" at *Indian Institute of Technology Bombay* from June 11- 15, 2018.
7. Faculty Development Program on "Foundation Programme in ICT for Education" conducted by *Indian Institute of Technology Bombay* from March 08- April 12, 2018.
8. Faculty Development Program on "Sustainable Design and Manufacturing" organized by School of Mechanical Engineering, *Shri Mata Vaishno Devi University, Katra* from February 12-16, 2018.
9. QIP Short-course on "Materials Tribology: Fundamentals and Recent Advances" organized by Department of Mechanical Engineering, *IIT (BHU), Varanasi, India* from March 23-29, 2017.

10. National Seminar on “Mechanical Engineering Research Opportunities and Challenges”, organized by School of Mechanical Engineering, *Shri Mata Vaishno Devi University, Katra* on April, 8, 2017.
11. QIP Short-course on "Tribology of Soft Matters: Biotribology, Microsystems and Automotive Applications" organized by Department of Mechanical Engineering and *Industrial Tribology, Machine Dynamics and Maintenance Engineering Centre (ITMMEC), IIT Delhi, New Delhi, India* from November 7-11, 2016.
12. 6<sup>th</sup> ICT based one week Workshop "Optimization using MATLAB", organized by Department of Mechanical Engineering, *Shri Mata Vaishno Devi University, Katra* in collaboration with *NITTTR Chandigarh, Punjab* from October 24 - 28, 2016.
13. One day workshop on "Patent Drafting & Filing" conducted by Department of Bio Technology, *Shri Mata Vaishno Devi University, Katra* and *TIFAC, Department of Science & Technology, Government of India* on October, 20, 2016.
14. Workshop on “Research Methodology and Data Analysis” at Human Resource Development Centre (HRDC), *Shri Mata Vaishno Devi University, Katra (J&K)* from September, 26-28, 2016.
15. 30<sup>th</sup> Orientation Course at Human Resource Development Centre (HRDC), *Punjabi University Patiala, Punjab* from June 20 - July 16, 2016.
16. 5<sup>th</sup> ICT based workshop on Recent Trends in Automobile Engineering organized by Department of Mechanical Engineering, *Shri Mata Vaishno Devi University, Katra* in collaboration with *NITTTR Chandigarh, Punjab* from February 29 to March 4, 2016.
17. Short Term Course on “Quality Management Systems” organized by Department of Mechanical Engineering at *National Institute of Technology, Hamirpur (H.P.)* from July 12-16, 2014.
18. Short Term Course on “IC Engine Fuels and Combustion Technology” organized by the Department of Mechanical Engineering, *Dr. B. R. Ambedkar National Institute of Technology, Jalandhar (Punjab)* from December 14 -18, 2013.

### MOOCs

1. Fundamentals of Fluid Power by *University of Minnesota, USA* on July 14, 2017.  
<https://www.coursera.org/account/accomplishments/certificate/UZQCU4CEJ8FN>
2. Materials Science: 10 Things Every Engineer Should Know by *University of California, USA* on April 30, 2019.  
<https://www.coursera.org/account/accomplishments/records/5X2WB36DH76Z>
3. The 3D Printing Revolution by *University of Illinois at Urbana-Champaign* on May 06, 2019.  
<https://www.coursera.org/account/accomplishments/records/CXBD582HRXMV>
4. Introduction to Engineering Mechanics by *Georgia Institute of Technology* on January, 2020  
<https://www.coursera.org/account/accomplishments/certificate/V74M8JYBWGYW>
5. Mechanics of Materials I: Fundamentals of Stress & Strain and Axial Loading *Georgia Institute of Technology* on April, 2020.  
<https://www.coursera.org/account/accomplishments/certificate/RM4VJ9U4J4ZD>

6. Introduction to Sustainability *University of Illinois at Urbana-Champaign* on May, 2020.  
<https://www.coursera.org/account/accomplishments/records/GYBAEUJDZHV>
7. Disaster Preparedness *University of Pittsburgh* on May, 2020.  
<https://www.coursera.org/account/accomplishments/certificate/SYP35DR54YCV>

### Book Chapters

1. Anand, R., Haq, M. I. U., & Raina, A. (2020). Bio-Based Nano-Lubricants for Sustainable Manufacturing. In *Nanomaterials and Environmental Biotechnology* (pp. 333-380). Springer, Cham.
2. Mohan, S., Anand, A., Haq, M. I. U., Raina, A., & Kumar, R. (2020). Calcium Fluoride a Potential Solid Lubricant for Green Tribology and Sustainability. In *Recent Advances in Mechanical Engineering* (pp. 587-595). Springer, Singapore.
3. Slathia, S., Anand, R., Haq, M. I. U., Raina, A., Mohan, S., Kumar, R., & Anand, A. (2020). Friction and Wear Behaviour of AA2024/ZrO<sub>2</sub> Composites: Effect of Graphite. In *Recent Advances in Mechanical Engineering* (pp. 597-601). Springer, Singapore.

### Conferences/ Workshops (Session Chair/ Organizing Member)

1. Chaired a session in the *International conference on Advancement in Engineering Sciences (AES2019)*, SMVD University, Katra, September 28-29, 2019.
2. Member, Organizing Committee, Faculty Development Program on “Engineering Optimization ” organized by School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra from September 25-29, 2018
3. **Coordinator** of the National Workshop on 3D Printing for New Product Development organized on September 13, 2019, by the School of Mechanical Engineering, SMVD University, Katra, India.
4. Member, Organizing Committee, Indo-US Next Generation Logistics Supply Chain and CEO Workshop held at School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India, August 5-10, 2019.
5. Member, Organizing Committee, Faculty Development Program on “Best Manufacturing Practices in Industries” held at School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India, December 17-21, 2018.
6. **Co-convener** of the International Conference on Mechanical Engineering and Allied Sciences (ICMEAS 2018), organized from September 14-15, 2018, by the School of Mechanical Engineering, SMVD University, Katra, India.
7. Member, Organizing Committee, “2<sup>nd</sup> National Conference on Innovative Trends in Mechanical Engineering (NCITME-2018)” held at the School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India, March 23-24, 2018.
8. Member, Organizing Committee, Faculty Development Program on “Sustainable Design and Manufacturing” held at School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India, February, 12-16, 2018.



9. Member, Organizing Committee, 2nd Industry Academia Conclave held at the Department of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India on 28th April, 2018.
10. Member, Organizing Committee, “National Seminar on Research Opportunities and Challenges in Mechanical Engineering” held at the Department of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India, April 8, 2017.
11. Member, Organizing Committee, “National Conference on Innovative Trends in Mechanical Engineering -2017 (NCITME-2017)” held at the Department of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, India, March 3-4, 2017.

### B. Tech Projects Guided

1. CFD based analysis of beam exit window foil and loss of vacuum accident in electron beam accelerator (2020).
2. Evaluation of wear behavior of different automobile tires (2020).
3. Design and Additive Manufacturing of Pump Impeller using 3D Printing Technology (2019).
4. Design and fabrication of Automatic Bending Machine (2019).
5. Design and Fabrication of Atmospheric Water Generator (2018).
6. Design and Fabrication of Pedal Powered Washing Machine (2017).
7. Design and Fabrication of Thermo-Emf Refrigerator System (2016).

### M. Tech Thesis Guided

1. Effect of surfactants on dispersion stability and tribological behaviour of chemically modified lubricating oil (2020).
2. Lubrication Characteristics of Chemically Modified Canola and Sunflower Oil (2019).
3. Effect of surface texturing on friction behavior of polylactic acid (PLA) polymer (2019).
4. Synergism of TiO<sub>2</sub> and Graphene as nano-additives in Cutting Fluids (2019).
5. Investigation of lubrication characteristics of olive oil using nano additives (2018).
6. Tribological properties of Vegetable oils using copper nanoparticles (2017).

### Extension work

- Member Secretary of Quality Assurance Cell, SME, SMVDU
- GATE Coordinator, SME, SMVDU
- Mentor of the M. Tech Final year students, SME, SMVDU
- Coordinator of Fluid Mechanics and Fluid Machines Lab, SME, SMVDU
- Member of the Nano Technology Cell, SMVDU
- Member of the Anti-Ragging Squad (2015, 2016, 2017, 2019), SMVDU
- Member of Convocation Committee (2016, 2018, 2019), SMVDU
- Member of Team Ekokart-2017, SMVDU
- Involved in NBA/NAAC preparations of SME, SMVDU

- Member of School Examination Cell and Library Committee, SME, SMVDU
- Faculty in charge B. Tech/M. Tech Registrations, SME, SMVDU
- Member of Student Faculty Committee, SME, SMVDU
- Member Board of Studies, SME
- Member School Academic Affairs Committee, SME
- Examination Evaluation of Jammu University

### Industrial Visits for Students

- Baglihar Hydrel Power Project, Ramban, J&K (03 times)
- Salal Hydrel Power Project, Reasi, J&K (02 times)
- Kashmir Steel Rolling Mills, Jammu, J&K (02 times)
- Narbada Castings Unit, Jammu, J&K (01 time)
- Jamna Castings Unit, Jammu, J&K (01 time)

### Declaration

I hereby declare that all the information furnished by me is true to the best of my knowledge.

Date: 15/05/2020

Place: Katra