Curriculum Vitae

Prabir Sarkar, PhD

Associate Professor, Department of Mechanical Engineering
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Co-Principal Director, Agriculture and Water Development Hub (**AWaDH**) supported by the Department of Science and Technology, Government of India, National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)
Fellow of the Institute of Engineers (FIE), Chartered Engineer (C.Eng)
Associate Editor, Smart and Sustainable Manufacturing Systems (ASTM)

Websites: http://www.iitrpr.ac.in/smmee/prabir (official); http://www.prabirsarkar.com (personal)
LinkedIn: https://www.linkedin.com/in/prabir-sarkar

I. Background

Research and Teaching Experience

Aug 2016 - present	**Associate Professor**, Department of Mechanical Engineering, Indian Institute of Technology (IIT) Ropar, India
April 2011 - July 2016	**Assistant Professor**, Department of Mechanical Engineering, Indian Institute of Technology (IIT) Ropar, India
May 2008 - April 2011	**Associate Researcher** (Post. Doc., Guest Researcher), System Integration Division of Engineering Laboratory, at National Institute of Standards and Technology (NIST), U.S. Department of Commerce, Gaithersburg, Maryland, USA
Nov 2007 - April 2008	**Post-Doctoral Research Associate**, Centre for Product Design and Manufacturing, Indian Institute of Science (IISc), Bangalore, India
Jan 2003 - Oct 2007	**National Doctoral Fellow**, Indian Institute of Science (IISc), Bangalore, India

Industrial Experience

March 2007 - Oct 2007	**Co-founder and Managing Director** of a product design and development consultancy startup firm, 'ODEA solutions'
Aug 2000 – Dec 2002	**Development Engineer** (senior design engineer), R&D Center, Bharat Earth Movers Limited, PSU, Kolar Gold Fiends, Karnataka, India

Other Experience

Aug 2020- present	**Co-Principal Director** of Technology Innovation HUB (TIH)- Agriculture and Water Technology Development Hub (AWADH), established by the Department of Science and Technology, Government of India at IIT Ropar in the framework of National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).

Education

Jan 2003 - Nov 2007	**Doctor of Philosophy (Ph.D.)**, Mechanical Engineering, Indian Institute of Science (IISc), Bangalore, India. *Advisor:* Prof. Amaresh Chakrabarti. Title: Development of a Support for Effective Concept Exploration to Enhance Creativity of Engineering Designers. Submitted November 2007, defended March 2008. 7.0/8.0 (87%)
July 1998 - Aug 2000	**Master of Design (M.Des.)**, Mechanical Engineering, Product Design and Engineering, Indian Institute of Science (IISc), Bangalore, India. 6.6/8 (82%)
July 1994 - Aug 1998	**Bachelor of Engineering (B.E.),** Production Engineering, National Institute of Technology (NIT), Tiruchirappalli, Trichy. India, 70%

Fellowships

2018 **Fellow of the Institute of Engineers, India**

2005 National Doctoral Fellow award, NDF of All India Council for Technical Education, AICTE (was given to 50 Ph.D. students all over India), 2005-2007.

2003 MHRD fellowship, Indian Institute of Science, Bangalore, 2003-2004.

Awards

2020 MTV Roadies Revolution award received as a team. Stubble Removing Machine (SRM) inventors of IIT Ropar receives a cash prize of Rs. 1 lakh from MTV Roadies Revolution

2015 Outstanding researcher award in Mechanical Engineering, VIFFA 2015 awards, Centre for advanced research and design, Venus international foundation, India.

Travel grants

2009 NIST travel grant to attend DETC, ASME conference at San Diego, 2009.

2007 Travel grant from the government of India for presenting four papers at ICED, 2007 conference in Paris, France.

Best paper awards

2021 Best paper award. 2nd International Conference on Recent Advances in Fluid and Thermal Sciences (iCRAFT 2020).

2009 One among the top five best papers in International Conference on Research in Design, ICORD 2009.

1997 Third best paper award at a National Level Technical Symposium, held in N.I.T, Kurukshetra, for presenting a paper on "Implementation of expert system on wire cutting EDM", 1997.

1997 Best paper award in a southern India level technical symposium held in R.V.S. College, Dindugal, 1997.

Honors

2017 Leading educationist of India award and APJA Kalam Award for excellence, FFD.

2016 Biography included in “2000 Outstanding Intellectuals of the 21st Century,” International Biography Centre, St. Thomas Place, Great Britain.

2016 Biography included in “Top 100 Professionals 2016,” International Biography Centre, St. Thomas Place, Great Britain.

2016 Received Bharat Gaurav Award, 2016, IIF Society.

2016 Biography in the 33rd edition of Marquis Who’s Who in the World, 2016.

Achievements

2016 **Two world record holder.** Entered in the Limca Book of Records and India Book of Records in 2016, twice. As an outcome of my course, we designed and manufactured, the longest ballpoint pen and the longest fountain ink pen in the world and made two world records.

1998 All India 6th rank (99.3 percentile), 1998 in Common Entrance Examination for Design (CEED).

II. Research

Externally sponsored grants (total about 115 crores INR, 15.5 Million USD equivalent)

2020- 2022	**Stubble Burning: Health impacts and social perception - an explorative study for prevention**
Funding source	Swedish Research Council (SRC)
Level of support	7,46 000 SEK (≈ 63,00 000 INR)
Organizations involved	IIT Ropar and Mid Sweden University
Role	Co-PI (IIT Ropar: Dr. Samaresh Bardha (HSS), Dr. Parwinder Singh (HSS), and Dr. Prabir Sarkar (ME). Foreign PI: Prof. Koustuv Dalal, Professor in Public Health Economics, Mid Sweden University, Sweden.)

2020-2025	**Establishing of Agriculture and Water Hub under National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS): Technology Innovation Hubs (TIHs)**
Funding source	Department of Science and Technology (DST), Gov. of India
Level of support	110 crores over five years
Organizations involved	IIT Ropar
Role	Co-PI (Co-PIs: Dr. Pushpendra Singh, Dr. Prabir Sarkar, Dr. Mukesh Saini, Dr. Neelkant, Dr. Vijay Anand, Dr. Suman Kumar, Dr. Neeraj Goel) Domain coordinator: Stubble management and urban farming

2019- 2022	**Micro Green Roofing**
Funding source	IMPRINT- 2, MHRD, GOI and ELT India
Level of support	About 75 lakhs (58 lakhs from MHRD+ 17 lakhs from ELT India)
Organizations involved	IIT Ropar, IIT Kharagpur, ELT India, industry
Role	Principal Investigator (Co PI- Dr. Putul Haldar, IIT Ropar and Dr. Chirodeep Bakli, IIT Kharagpur)

2017-2020	**Big Data Analysis: A key to understand the Dynamics of Collaborative Knowledge Building**
Funding source	Cognitive Science Research Initiative (CSRI), Department of Science and Technology (DST), India
Level of support	INR 14,40,600 / USD 22142
Role	Co-Principal Investigator (PI, Dr. Sudarsan Iyenger)

2016-2019	**Experimentation and simulation assisted enhancement of energy efficiency & pollution reduction in hand tool industries**
Funding source	Department of Science and Technology (DST), India, Ministry of Micro, Small and Medium Enterprises under Uchhatar Aviskar Yojana
Level of support	INR 99.58 lakhs/ USD 147616
Role	Co-Principal Investigator (PI, Dr. Dhiraj Mahajan)

2016-2019	**Study of aesthetics in product design using eye-tracking equipment from a cognitive view**
Funding source	Cognitive Science Research Initiative (CSRI), Department of Science and Technology (DST), India
Level of support	INR 16.26 lakhs/ USD 24,440
Role	Principal Investigator

2014-2019	**Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) Program**
Funding source	Ministry of Science and Technology, Government of India
Level of support	INR 235 lakhs/ USD 380,000
Role	Co-Principal Investigator (PI, Prof. Harpreet Singh)

2015-2016-2017	**Grant for strengthening of IPR cell**
Funding source	Patent Information Centre, Punjab State Council for Science and Technology
Level of support	INR 0.2 lakhs/ USD 330/ each year
Role	Principal Investigator/ Nodal officer

2014-2015	**Grant for setting up and strengthening of IPR cell**
Funding source	Patent Information Centre, Punjab State Council for Science and Technology
Level of support	INR 0.2 lakhs/ USD 330
Role	Principal Investigator/ Nodal officer

2014-2017	**Engineering Driven Sustainable Supply Network Design**
Funding source	Department of Science and Technology (DST), India and Engineering and Physical Sciences Research Council (EPSRC), UK
Institute involved	IIT Ropar, IIM Lucknow, and University of Cambridge
Level of support	£ 1 million / USD 1,517,300, IIT Ropar's share: INR 48,00,000/ USD 70,021
Role	Co-Investigator (Prof. Jag Sarai, U Cambridge, PI, Prof. Harpreet Singh, IIT Ropar, Co-PI, Dr. Ekta Singla)

Internally sponsored grants (total about 1 crore INR). Funding source: Indian Institute of Technology, Ropar

2020	**Development of vertical garden under multidisciplinary agriculture research initiative**
Level of support	INR 100 lakhs (my share 14 lakhs) as Co-Principal Investigator

2020	**Aesthetically design and development of electric two-wheelers under multidisciplinary electric vehicle research initiative**
Level of support	INR 100 lakhs (my share about 20 lakhs) as Co-Principal Investigator

2019	**Development of machines to stop stubble burning**
Level of support	INR 11.5 lakhs as Co-Principal Investigator

2013	**Establishment of Design studio**
Level of support	INR 10 lakhs/ USD 18,699 as Co-Principal Investigator

2012	**Establishment of Design research laboratory**

Level of support	INR 5.7 lakhs/ USD 11,181 as Principal Investigator

2011-2012	**Purchase of Eye-tracking equipment (Research Grant)**
Level of support	INR 45 lakhs / USD 67400 as Principal Investigator

2011	**Establishment of sustainable design and manufacturing laboratory**
Level of support	INR 49 lakhs / USD 120,000 as Co-Principal Investigator

2011-2012	**Creative sustainable product design methodology with standards compliant, and a support for measuring product sustainability in early design (Institute seed grant)**
Level of support	INR 9.8 lakhs / USD 21,777 as Principal Investigator

Consultancy projects (17 lakhs INR)

2019- 2022	**Micro Green Roofing**
Funding source	ELT India (under IMPRINT 2 scheme)
Level of support	17 lakhs
Role	Principal Investigator

Dec 2015	**Bone alignment measuring system**
Funding source	IIT Ropar and PGI Chandigarh joint initiative
Level of support	Financial expenses borne by IIT Ropar
Role	Principal Investigator. Product developed in collaboration with Dr. Chawan, of Post Graduate Institute of Medical Education and Research (PGIMER)

Dec 2015	**Improved surgical cutter for plastic surgery**
Funding source	IIT Ropar and PGI Chandigarh joint initiative
Level of support	Financial expenses borne by IIT Ropar
Role	Principal Investigator. Product developed in collaboration with Dr. Sunil Gaba of Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh along with Dr. S. S. Padhee and Mr. Sameer Mishra, a summer internship student, 2015

Invited talks and presentations

2023 **Invited speaker** for an expert talk on "Conceptual design of cars from aesthetic point of view." Department of Automobile Engineering, Chandigarh University. 11 April 2023.

2023 **Invited speaker** for the positional statement session. Title: Stimulus based pedagogy to understand target audience in design education. Future of Design Education: InFuSED23. Jointly with Kamalpreet Sandhu. 27 January 2023, Indian Institute of Science, Bengaluru 560012, India.

2022 **Invited speaker** as a resource person, for "Emerging avenues of Supply Chain Logistical Drivers for Atma-Nirbhar Bharat" FDP program. Sponsored by AICTE Training And Learning (ATAL) Academy. Department of Management Studies and Department of Mechanical Engineering, MNIT, Jaipur (5-12.22- 16.12.22). Two talks are delivered. Talk titles: Sustainable Supply Chain and Sustainable Supply Chain Design.

2022 **Keynote Speaker** of "International Conference on Product Design" on 18th November 2022. Lovely Professional University (LPU). Talk title: Sustainability and Eco-design.

2022 **Panel member** for BUILD (**Boeing University Innovation Leadership Program**), cohosted by FITT (Foundation for Innovation and Technology Transfer), IIT Delhi, 15th October, 2022.

2022 **Keynote Speaker** for Advancements in Simulation and Experimental Techniques in Mechanical Engineering (ICASEME-2022), 12 -13th October, 2022. Topic: Reverse Engineering.

2022 Guest of Speaker: Country's biggest Free Legal Classes for Startup by Smart City Jabalpur, "Legal Pathshala 2022", March 2022.

2022 Presented a talk on "Stubble burning issue in India and the development of the SRM machine" in Indo-Taiwan Joint Workshop on Agriculture and Water Resource Management, Jan 19, 2022.

2021 **Prime panelists**, round table discussion about Intellectual Property Rights and Patents on the occasion of World Intellectual Property Day on April 26, 2021. National Research Development Corporation (NRDC), an enterprise of DSIR, **Ministry of Science & Technology, Gov. of India**.

2021 Invited talk AICTE Training and Learning (ATAL) Academy sponsored 5 day Faculty Development Programme (FDP) on Advancement and Futuristic Trends in 3D Printing and Design. February 1-5, 2021. Introduction to 3D printing and Standards, Norms and Regulations for 3-D Printing.

2020 Invited talk. Sustainable Product Design: Towards a better future. Five-day Short-Term Training Program (STTP) funded by TEQIP III on "Sustainable Manufacturing for Atma-Nirbhar Bharat" from Dec 21 - 25, 2020. Department of Management Studies. MNIT Jaipur

2020 Invited talk. Standards in Design and Manufacturing. 8th International Conference on Advancements and Futuristic Trends in Mechanical and Materials Engineering, December 19-20, 2020.

2020 Delivered a talk on Post-harvest Stubble Removing Machine (SRM). Agriculture Technologies presentations facilitated by the **office of Principal Scientific Adviser, GOI** in partnership with NASSCOM Foundation. Agriculture Technology Presentations - Phase 6 Friends of the Farmers.18 Jul 2020

2020 Delivered a lecture on Intellectual Property Rights as the Chairman of IPR cell, IIT Ropar. Faculty development program on "Research trends in science and engineering" in Institute of Engineering & Management Salt Lake, Kolkata on 29th July 2020.

2020 Guest online lecture on "Approaching education related issues using creative problem solving techniques" for faculty members of G H Raisoni Institute of Engineering and Technology, Pune on 6th June 2020.

2020 Guest Lecture on "Reverse engineering" for ME students of GLA University on 23/04/2020.

2019 Invited talk. Sustainable Design and Manufacturing. 7th International Conference on Advancements and Futuristic Trends in Mechanical and Materials Engineering, December 5-7, 2019.

2019 Expert talk delivered on "Product development and bio mimicry in design" in Chandigarh University on 19.7.19.

2019 Expert talk on Sustainability standards and standards for Industry 4.0 on 15th July 2019. One-Week Workshop on Manufacturing for Industry 4.0 under Advanced Knowledge in Nutshell (AKIN), July 15th-19th, 2019, IIT Ropar.

2019 Expert talk on "Sustainability standards" in One-Day Workshop on 'Sustainable Manufacturing', March 19, 2019; Main Campus, IIT Ropar. Sponsored by: Materials & Manufacturing Panel, Aeronautics Research & Development Board.

2018 **Guest of Honor**. Addresses on academic collaborations. CSIR-CMERI, 28th Sep 2018.

2018 Expert lecture on aesthetics, Chandigarh University, Oct 8th, 2018.

2018 Invited talk on 'Creative Problem Solving Techniques for Engineering Projects.' MNIT Jaipur, 13th Aug 2018.

2018 **Key note speaker**, Biomimicry, Design Inspired by nature, in International conference on Futuristic Development in Mechanical Engineering. Kautilya Institute of Technology and Engineering and School of Management (KITE-SOM), Sitapura, Jaipur, India, Feb, 21, 2018.

2016 Invited speaker in Global Initiatives on Academic Networks (GIAN) program on Introduction to Sustainable Manufacturing at MNIT Jaipur, 19-23 December 2016. Talk title: Sustainability standards.

2016 Invited speaker in One Day Meet of Medical Device Innovation Cluster at CSIO, Chandigarh, organized by DST Centre for Policy Research, Panjab University, Chandigarh on November 12 2016. Talk title: Innovation and manufacturing of Medical Devices at the Design research lab of IIT Ropar.

2016 Invited speaker for the Faculty Development Program on "A look into the future" being organized by Dr.SSB University Institute of Chemical Engineering and Technology, Panjab University under TEQIP-II (A World Bank Project). October 25, 2016. Talk title: Sustainable Product Design.

2016 Invited speaker for Indo-US dissemination workshop on design of sustainable systems, 20-22 June 2016, Indian Institute of Science, Bangalore. Talk title: Understanding sustainability in pharmaceutical companies through a case study.

2015 **Guest of honor and expert inaugural lecture** on "Sustainability and Eco design", in short term training program on "advances on quality management practices in industries, 10th July, 2015 at National Institute of Technology, Hamirpur, HP, organized by Mechanical Department, NIT, Hamirpur.

2015 Expert talk on sustainability and eco-design in ISTE-PTU Sponsored Faculty Development Programme on, "Emerging Trends in Mechanical Engineering (ETME-15)," Rayat Institute of Engineering & Information Technology, June 8, 2015.

2014 **Panel member**, the need of product design course in undergraduate study in an international symposium on product design, Chandigarh University, 16 July 2014.

2014 **Key note speaker**, creative problem-solving techniques in product design at an international workshop on creative product design, Chandigarh University, 15 July 2014.

2014 **Panel member** and invited talk, industry academia collaboration at Confederation of Indian Industries (CII), Chandigarh, 5th March 2014.

2012 Invited lecture on sustainability and eco-design at Lovely Professional University, Jalandhar, 2012

2012 Invited lecture on automobile design, Society of Mechanical Engineers (SME), IIT Ropar chapter, 2012

2011 Invited lecture on 'Approaching education related issues using creative problem-solving techniques,' faculty development program, Rayat Institute of Engineering and Information Technology, Ropar Campus, on July 19th, 2011

2009 Invited talk on the design of new products, Indian Institute of Technology, Chennai, 2009.

Research guidance

PhD guidance completed (degree awarded and defended)

1. Gyanendra Singh Goindi (co-guide). Title: Investigation of Ionic liquids as metalworking fluids in minimum quantity lubrication machining. January 2012-October, 2015. Defended: 8/11/16. **Degree awarded** on 21/11/16. Current position: Professor and Dean, Department of Mechanical Sciences, Chandigarh University, Mohali.
2. Sagar Dhage (co-guide). Title: Investigation of surface textured cutting tools for machining of medium carbon steel, January 2012-March 2017. Submitted: Nov 2017. Defended: Nov 2018. **Degree awarded**: 3/12/18. Current position: Associate Professor and Assistant Director (corp), JSPM Narhe Technical Campus, Pune.
3. Umesh Chaturvedi (co-guide). Title: Sustainability in Indian pharmaceutical companies. Joined under External Registration Program in MNIT, Jaipur. January 2014- July 2019. Submitted on 15th July 2019. **Defended** on 7.2.2020. **Degree awarded.** Current position: Assistant Professor, GLA University, Mathura.
4. Bijendra Kumar (guide). Title: Assessing and improving sustainability of products during conceptual design. August 2013-2018. Synopsis completed on 22.02.19. Submitted on 26th June 2019. **Defended** on 14.5.20. **Degree awarded.** Current position: Working for TCS on National High Speed Rail Corporation Limited.
5. Rachit Kumar Sharma (co-guide). Title: Assessing and improving sustainability in supply networks of manufacturing organizations. Through DST (India) -EPSRC (UK) funded Engineering Driven Sustainable Supply Network Design project. January 2016-2021. Synopsis completed on 12.10.2020. Submitted on

8.12.2020. **Defended** on 29.6.2021. Current position: Employed in a foreign sustainability assessment firm. **Degree awarded.**

6. Prashant Kumar Singh (guide). Title: Understanding and Developing Eco design Support for Environmentally Conscious Product Development. August, 2016-2021. Synopsis completed on 8.9.2021. Current status: Faculty in an institute in UP. **Submitted**: 9.12.2021. **Defended**: 02/08/2022. **Degree awarded.**

PhD guidance completed (synopsis completed)

7. Sunil Sharma (guide). Title: Developing bioinspired design approaches to support packaging. Joined under the External Registration Program. August 2016-present. Synopsis completed.
8. Jitender (guide). Title: Understanding and Supporting Designers to Improve the Engineering Aesthetics of a Product. Through DST, CSRI funded project. January 2017. Synopsis completed.

PhD guidance (pursuing)

1. Anil Baliram Ghubade (guide). Joined as a part-time student. Aug 2018.
2. Harmanpreet Singh (co-guide). August 2019- present.
3. Vikalp Sharma (guide). Jan 2020-present.
4. Alok Bihari Singh- External Joint Supervisor, MNIT, Jaipur.
5. Kamalpreet Sindhu (guide)- Part-time. August 2021-present.
6. Subha Nath (co-guide)- Joined as a regular PhD scholar in January 2022.
7. Sandeep Kumar (guide)- Joined as a regular PhD funded by AWaDH in August 2022.
8. Akhil Sharma (guide) - Joined as a regular PhD funded by AWaDH in Jan 2023.

Post-doctoral (completed)

1. Rachit Kumar Sharma (co-guide). Supply chain management.

Masters guidance (completed)

1. Suraj Goala (guide). Design-Assist Tool - Deciding the Efficacy of Additive Manufacturing Processes and Assisting Product Designers using DfAM. Completed, 2021.
2. Suraj Gururani (guide). Analysis of design fixation and its mitigation with the help of bioinspired design. Completed, 2021
3. Abhishek Chauhan (guide). Design Aesthetic of an Electric two-wheeler. Completed, 2021.
4. Sai Teja Pothuri (guide). Development of an automation module for Microgreen Roofing, 2019.
5. Sarang E Tayade (guide). Understanding the relationship between stock and performance of companies, May 2018.
6. Rohit Bamne (guide). Study of driving behaviour on the basis of distractions, July 2018.
7. Jitender (co-guide). Development of a method for benchmarking sustainable products (external: NIT Srinagar, J&K), completed, 2016.

Other: Research Fellow-JRF as manpower trained (completed)

- Geo Raju. Funded by DST (India) -EPSRC (UK), (April 2015- January, 2016).
- Rachit Kumar Sharma. Funded by DST (India) -EPSRC (UK), (September 2015-January, 2016).
- Jitender. DST, CSRI funded project, (August 2016-December 2016).
- Yuvraj K. Project, micro green roofing. Funded by DST- IMPRINT 2.
- Rishish Mishra. Project, micro green roofing. Funded by DST- IMPRINT 2.
- Shivam Panday. Project, micro green roofing. Funded by DST- IMPRINT 2.

Other: Undergraduate guidance (B.Tech. main project, completed) –selected only

1. Abhishek Ashish and Divyanshu Garg, 2022. Design for Agriculture 4.0: Paradigm, Analysis and selection of techniques for India
2. Aman Goyal and Aman Saraf, 2022. Automation in Green Roof
3. Gollapalli Umesh Siddhardha, Hari Alekh Panjwani and Pachipala Hemanth, 2022. Designing Heat Sink
4. Rohan, Prashik, Rahul Meena, 2022. Repair and punch (co-supervised)
5. Development of a Multiphonics system. Sonu, 2020
6. Expert review web site, Asish Dhingan, P Mukesh, Ravi Mohan Meena, and Alok Mishra, 2015
7. Real estate website development, Navneet Singh, Naveen Kumar, Honey Singla, and Naman Chhabra, 2015
8. Prediction of the effect of design changes on company's performance, Siddharth L., 2015
9. Seed oil extractor, Javed Khan and Nishant Kumar (co-guide, Dr. Harpreet Singh), 2014
10. Handy machine to extract oil from mustard seeds, Ajay Kumar Verma and Pareep Singhroha (co-guide), 2013
11. Development of particle board using Rice/Wheat Straw, Ankush Kumar and Lal Singh (co-guide), 2013.
12. Development of software tool for sustainability evaluation in product design, Parteek Singla, Prashant Yadav, Praveen Kumar Sah, and Raj Narayan Saha (co-guide), 2012.
13. Regenerative braking system for human-powered vehicles, Raj Narayan Saha and Prashant Yadav (co-guide), 2012.

Research Publications

Intellectual Property Rights (IPRs)

Patents Granted

1. Amaresh Chakrabarti, Prabir Sarkar, 2014. Method for Idea Generation for Creation of Product Designs, Indian patent application no.: 859/CHE/2006, patent grant no.: 258579, date of filing: 16th May 2006 (Link: http://www.ipcell.iisc.ernet.in) [Link].
2. Archana Badodekar, Prabir Sarkar, Amaresh Chakrabarti, Prasad G Kamble, 2005. A manually operated aid for impaired people to ingress and egress train and method thereof, 453/CHE/2005, Indian patent grant no.: 227939, date of filing: 20th April 2005. [Link]
3. B.Gurumoorthy, Neeraj Pal, and Prabir Sarkar, 2000. Rupturable disposable syringe, Indian patent grant number: 198228, date of filing: 25th February 2000.
4. Gyanendra Singh Goindi, Dr. Anshu Dhar Jayal, Dr. Prabir Sarkar, 2015. A Flexible Continuous Minimum Quantity Lubrication (FCMQL) system, Indian patent application number: 3971/DEL/2015, filing date: 07-Dec-2015. Patent grant no: 376967, dated 15/09/2021.
5. Dr. Prabir Sarkar, Dinesh Chauhan, Duddela Sai Harish, Gaurav Gupta, Dhruv Kumar Bansal, 2016. Semi-automatic food processing device for preparing sweets and savories, Indian patent application number: 201611000957, filing date: 11-Jan-2016. Patent grant no: 384307, dated 14/12/2022.
6. Amit R Patel, Prabir Sarkar, Himanshu Tyagi, Harpreet Singh, 2018. A Method for Determining a Single Discounting Rate for the Processes Involving Emissions. Application no: 201811044462. Date of filing: 26-Nov-18
7. **US Patent** Application No. 16/540,736. Inventors: Malkeet SINGH, Harpreet SINGH, Christopher Charles BERNDT, Prabir SARKAR. Date of Filing: 14/08/2019. Title: Technology and process for 3d printing using swarf particles
8. Dr. Prabir Sarkar, Bishal Ghosh, Mahak Sarin, Alluvala Mamata, Dev Prabhaker Singh Tomar, 2015. Stapler device with multi-tier force multiplication mechanism for binding hard materials, Indian patent application number: 3961/DEL/2015, filing date: 04-Dec- 2015.

9. Dr. Prabir Sarkar (Principal Investigator), Banoth Praveen Kumar, Honey Singla, Imroj Qamar, Jaskaran Singh Virdi, Kumar Harshad, 2013. Weighing system, Indian patent application number: 3354/DEL/2013, filing date: 15-November- 2013.
10. Dr. Prabir Sarkar, 2016. A programmable electro-mechanical combination locking system, Indian patent application number: 201611004726, filing date: 10-Feb-2016.

Design patent granted (Design registration)

11. Dr. Prabir Sarkar, Dr. Devendra Kumar Chauhan (Department of Orthopedics, Postgraduate Institute of Medical Education and Research (PGIMER, Chandigarh), students: Anshu Kaushal, Jaspal Singh, Kaustav Das, Milind Aggarwal. Bone alignment measuring device for knee surgery. Design Application No. 292918. Design accepted and published, Journal no: 42/2019, dated 18.10.2019

Patents Pending (filed, some of them are published) [link]

12. Ashish Sahu and Prabir Sarkar. A measuring device for measuring the surface contour of an object. Application No:02111051100, Filing Date:08-11-2021. Non-Provisional Application, Delhi.
13. Ashish Sahu and Prabir Sarkar. Safety mechanism for a device and a method thereof. 202111041794. Filing date: 15/09/2021.(Non-provisional)
14. Dr. Prabir Sarkar. Automatic mold forming device. Application no: 202111027616. Dated 21.6.21 (provisional). Dated 21.6.21 (Non-Provisional).
15. Mr. Amit Rajnikant Patel, Dr. Prabir Sarkar, Dr. Himanshu Tyagi and Prof. Harpreet Singh. System and method for tracking details of energy associated with an energy generation process. Application no.: 202011011721 dated 18/03/2020.
16. Dr. Prabir Sarkar, Prof. Harpreet Singh, Mr. Harmanpreet Singh, Mr. Fateh Singh, Mohd. Sahil and Mr. Kharak Singh. Stubble removing and conveying machine. Non-Provisional Patent Application filed before IPO-Delhi, 2019. Application no. 201911041636, dated 15-Aug-2019.
17. Filing of Complete Application (Patent of Addition) in India: (LRN No: P3001-IN). Application No: 201923001267. Date of Filing: 10/01/2019. Title: A technology and process for 3D printing using SWARF particles. Applicants: Indian Institute of Technology Ropar and Swinburne University of Technology. Inventors: Malkeet Singh, Harpreet Singh, Christopher Charles Berndt and Prabir Sarkar.
18. Dr. Prabir Sarkar, Akash Mathwani, Arpit Sharma, Jitenda Kumar, Harshjeet Singh Aulakh, 2017. System and method for controlling electronic locks, Indian patent application number: 201711003769, filing date: February 01, 2017.
19. Dr. Navin Kumar, Dr. Prabir Sarkar, 2016. A method of fabricating particleboard from cellulosic plant material, Indian patent application number: 201611029993, filing date: 01-Sep-2016.
20. Dr. Prabir Sarkar, Nishant Bagaria, Ekjot Singh, Nabajit Hazowary, Gaurav Kumar, 2016. A rectangular slot-cutting machine for slots of variable sizes, Indian patent application number: 201611015347, filing date: 03-May-2016.

Research Interests

Product Design and Manufacturing: Design creativity [journal>10]; Sustainable design [j>10]; Sustainable machining and manufacturing (including life cycle management) [j>10]; Bio-mimicry in engineering design [j>3], Aesthetics in engineering [j>1]

Metrics

Google scholar profile: http://scholar.google.co.in/citations?hl=en&user=k9oa6zIAAAAJ. Citations: >3000, h-index = 23, i10-index = 41

Journal Impact factors: I.F. (0.1-1)=6; I.F. (1-2)=2; I.F (2-3)=2; I.F. (3-4)=8; I.F. (4-5)=3; I.F.>8=4.

Top downloads and references

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C22. Bijendra Kumar*, Prabir Sarkar, 2016. Awareness of government initiative on sustainable development. 4th International Conference on Production and Industrial Engineering (CPIE-2016), National of Technology Jalandhar, India, 19-21 Dec, 2016.

C23. Sagar B. Dhage*, Anshu Dhar Jayal, and Prabir Sarkar, 2016. Effects of cutting tool surface texturing on the surface integrity of machined AISI 1045. Proceedings of First Structural Integrity Conference and Exhibition (SICE-2016), Bangalore, July 4-6, 2016.

C24. L. Siddharth* and Prabir Sarkar, 2016. A methodology for predicting the effect of engineering design changes. Fourth International Conference on Design Creativity (4th ICDC), Atlanta, GA, November 2nd-4th, 2016 (accepted, however not presented).

C25. Geo Raju*, Prabir Sarkar, Harpreet Singh, Ekta Singla, Rachit Sharma*, 2016. Comparison of Environmental Sustainability of Pharmaceutical Packing. International conference on recent trends in engineering and material science, (ICEMS-2016) March 17-19, 2016, Jaipur National University, Jaipur.

C26. Bijendra Kumar*, Prabir Sarkar, 2016. Prediction of future car forms based on historical trends. International conference on recent trends in engineering and material science, (ICEMS-2016) March 17-19, 2016, Jaipur National University, Jaipur.

C27. Geo Raju*, Harpreet Singh, Prabir Sarkar, Ekta Singla, 2016. A framework for evaluation of environmental sustainability in pharmaceutical industry. Dipak Kumar Mandal and Chanan Singh Syam (Eds.), Lecture notes in mechanical engineering, CAD/CAM, Robotics and Factories of the Future. Proceedings of the 28th International Conference on CAD/CAM, Robotics and Factories of the Future 2016, Springer ISSN 219-4356. DOI 10.1007/978-81-322-2740-3.

C28. Patel A. R. *, Sarkar Prabir, Singh Harpreet, Tyagi Himanshu, Sagi Sudhakar, 2015. Emission discounting method for mitigation of environmental issues. Fist IEEE Uttar Pradesh Conference-International Conference on Energy Economics and Environment (UPCON-ICEEE 2015), March 27-28, 2015, Greater Noida, India.

C29. Prabir Sarkar, Srinivas Kota, Bijendra Kumar*, 2015. Understanding consumers' perceptions of sustainable products in India. International Conference on Research in Design, ICORD 2015, Bangalore, India, 7-9th January, 2015. (Also published as Springer book chapter, CoRD'15 – Research into Design Across Boundaries Volume 2 in Volume 35 of the series Smart Innovation, Systems and Technologies pp 99-112.)

C30. Goindi, G. S.*, Chavan, S. N., Jayal, A. D., Mandal, D., Sarkar, P, 2014. Investigation of ionic liquids as metalworking fluids in minimum quantity lubrication machining of AISI 1045 steel. 5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014), Guwahati, 12-14, December, 2014.

C31. Dhage, S. B.*, Jayal, A. D., Sarkar, P., 2014. Investigation of surface textured cutting tools for sustainable machining. 5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014), Guwahati, 12-14, December, 2014.

C32. Sameer Gupta*, Prabir Sarkar, and Ekta Singla, 2014. Understanding Different Stakeholders of Sustainable Product and Service Based Systems using Genetic Algorithm for Sustainable Manufacturing. 5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014), Guwahati, 12-14, December, 2014.

C33. Prabir Sarkar and Bijendra Kumar*, 2014. Identifying Tools for Remotely Located Collaborative Interactions Proceedings of International Conference on Recent Advances in Engineering and Computation Sciences, IEEE sponsored RAECS, UIET Panjab University Chandigarh, 06 – 08 March, 2014.

C34. Patel Amit R*, Sarkar Prabir, Singh Harpreet, Tyagi Himanshu, and Sagi Sudhakar, 2014. Life cycle assessment of intermediate Pyrolysis of wheat straw for sustainable energy alternate and emission mitigation. International conference on "Innovative Trends in Mechanical, Materials, Manufacturing, Automotive, Automobile and Aeronautical Engineering (ITMMMAAAE)- 2014, 15th- 16th, February 2014. New Delhi.

C35. Prabir Sarkar, Che Bong Joung, John Carrell, Shaw Feng, 2011. Sustainable Manufacturing Indicator Repository. ASME 2011, International design engineering technical conference & computers and information in engineering conference, August 28-31, Washington DC, USA. Paper no. DETC2011-47491 pp. 943-950.

C36. Paul Witherell, Prabir Sarkar, Anantha Narayanan, Jae Hyun Lee, Sudarsan Rachuri, 2011. An Approach for Identifying Gaps and Overlaps in Standards to Determine Product Applicability. ASME 2011, International design engineering technical conference & computers and information in engineering conference, August 28-31, Washington DC, USA. http://dx.doi.org/10.1115/DETC2011-48631.

C37. Anantha Narayanan, Jae Hyun Lee, Paul Witherell, Prabir Sarkar, Sudarsan Rachuri, 2011. An Information Modeling Methodology for Sustainability Standards. ASME 2011, International design engineering technical conference & computers and information in engineering conference, August 28-31, Washington DC, USA. Volume 2: 31st Computers and Information in Engineering Conference, Parts A and B. ISBN: 978-0-7918-5479-2.

C38. Sudarsan Rachuri, Prabir Sarkar, Anantha Narayanan, Jae Hyun Lee, Paul Witherell, 2011. Towards a Methodology for Analyzing Sustainability Standards using the Zachman Framework. Proceedings of the 18th CIRP International Conference on Life Cycle Engineering, Technische Universität Braunschweig, Braunschweig, Germany, May 2nd - 4th, 2011.

C39. Vicente Chulvi; Elena Mulet; Amaresh Chakrabarti; Srinivasan V; Prabir Sarkar, 2010. Quantitative measure of creativity related to SAPPhIRE-based method. Design computing and cognition, DCC 2010, 12–14 July 2010, University of Stuttgart, Stuttgart, Germany.

C40. Sudarsan Rachuri, Ram D Sriram, Prabir Sarkar, 2009. Metrics, standards and industry best practices for sustainable manufacturing systems. 5th IEEE Conference on Automation Science and Engineering (IEEE CASE 2009), August 22 to 25, 2009 (Invited paper). (citations=29)

C41. Prabir Sarkar, Sudarsan Rachuri, Hyo Won Suh, Kevin Lyons, Ram D. Sriram, 2009. A Measure of Product Sustainability Based on Triple Bottom Line. ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, San Diego, California, USA.

C42. Prabir Sarkar and Hyo Won Suh, 2009. Environmental impact of manufactured products: A measure inspired by nature. International Conference on Product Life cycle Management, PLM 2009, University of Bath, UK.

C43. Prabir Sarkar, Amaresh Chakrabarti, 2008. Analyzing creativity methods, International Conference on Research in Design, ICORD 2009, Bangalore, India.

C44. Prabir Sarkar, Amaresh Chakrabarti, 2007. Development of a method for assessing design creativity, International conference on engineering design, ICED'07, 28 - 31 August 2007, Paris. (citations=35)

C45. Prabir Sarkar, Amaresh Chakrabarti, 2007. Understanding search in design, International conference on engineering design, ICED'07, 28 - 31 August 2007, Paris. (citations=25)

C46. Prabir Sarkar, Amaresh Chakrabarti, 2007. Developing novel technical systems using ideas from nature, International conference on engineering design, ICED'07, 28 - 31 August 2007, Paris.

C47. Prabir Sarkar, Amaresh Chakrabarti, 2007. A tool for supporting protocol analysis, International Conference on Engineering Design, ICED'07, 28 - 31 August 2007, Paris.

C48. Prabir Sarkar, Amaresh Chakrabarti, 2006. Assessing degree of novelty of products to ascertain innovative products. International Conference on Product Life Cycle Management, PLM, 2006.

C49. Amaresh Chakrabarti, Prabir Sarkar, B. Leelavathamma, B.S. Nataraju, 2005. A behavioural model for representing biological and artificial systems for inspiring novel designs, International Conference on Engineering Design, ICED 05, Melbourne, August 15– 18, 2005.

National Conferences and Symposiums [* Students: PhD, M. Tech., JRF, and B.Tech.]

C50. Sagar Bhimraj Dhage*, Gyanendra Singh Goindi*, Anshu Dhar Jayal, Prabir Sarkar, 2013. Influence of cutting tool flank surface texture in mechanical micro-manufacturing of AISI 1045 steel. National conference on manufacturing, vision for future, Oct 12-13, 2013, IIT Guwahati.

C51. Prabir Sarkar, 2008. Supporting search of design spaces during design, Symposium on Research in Product Design, 2008, Indian Institute of Science, Bangalore.

C52. Prabir Sarkar, 2007. Exploring creativity, Symposium on Research in Product Design, 2007, Indian Institute of Science, Bangalore.

C53. Prabir Sarkar and Amaresh Chakrabarti, 2006. Determining and measuring product novelty to ascertain innovation in product development cycle. Proceedings of the National Conference on Design for Product Life Cycle, DPLC. February 17-18, 2006, BITS, Pilani.

C54. Amaresh Chakrabarti, Prabir Sarkar, Phaneendra.S, B.S. Nataraju, 2005. A Behavioural Model for Representing Natural and Artificial Systems for Inspiring Novel Designs. Proceedings of 5th National Seminar on Aerospace and related Mechanisms, ARMS, 2005. November 18-19, 2005, ISRO, Bangalore.

C55. Prabir Sarkar and K.Vijay, 1997. "Implementation of expert system on wire-cutting EDM", presented in National Level Technical Symposium, held at R.E.C, Kurukshetra, India, Literati, 1997.

International Workshops

IW1. Prabir Sarkar, Sudarsan Rachuri, Ram D Sriram, 2009. Understanding sustainability of products. Indo-US workshop on Designing Sustainable Products, Services and Manufacturing Systems, Bangalore India, Aug 18-20, 2009.

IW2. Prabir Sarkar, Amaresh Chakrabarti, 2008. Studying engineering design creativity, Invited paper in the Proceedings of the NSF Workshop on Studying Design Creativity, John Gero (ed.), Aix-en-Provence, France, March 2008.

Datasets

D1. Kumar, Bijendra*; Sarkar, Prabir, 2017. "Car Advertisement (Study Materials)", Mendeley Data, v8 http://dx.doi.org/10.17632/5snrynxwn4.8

D2. Singh, Jitender*; Sarkar, Prabir (2019), "Dataset on non-visual factors along with sub factors that affects the aesthetics appeal of cars in the mind of potential buyers", Mendeley Data, v1 http://dx.doi.org/10.17632/m3jb5nt2tf.1.

Technical Reports

TR1. Sudarsan Rachuri, Ram D. Sriram, Anantha Narayanan, Prabir Sarkar, Jae-Hyun Lee, Kevin W. Lyons, Sharon J. Kemmerer (Eds.), 2010. Sustainable Manufacturing: Metrics, Standards, and Infrastructure Workshop report, NISTIR.

TR2. Dozer group, BEML, 2002. DSIR (Govt. of India's Department for Scientific and Industrial Research) report on directional boring system.

TR3. Dozer group, BEML, 2002. TIFAC (Technology Information Forecasting & Assessment Council) report on Radio Controlled Dozer (Disaster management equipment).

III. Teaching

NPTEL/SWAYAM course

2023 Offering NPTEL/SWAYAM course on "**Product Engineering and Design Thinking**" along with Dr. Dan of IIT Kharagpur. Session: Feb- April 2023. Core, eight weeks, Mechanical Engineering, Credit Points: 2, Level: Undergraduate/Postgraduate, Enrolled: 2161 Link: https://archive.nptel.ac.in/courses/112/105/112105316/ https://onlinecourses.nptel.ac.in/noc23_me52/preview.

Courses taught at IIT Ropar

2022 **Additive Manufacturing** (ME549, 3-0-0-6-3), teaching for Mechanical undergraduate, graduate and PhD students from August- December 2022 (E-47, Feedback- 4.12/5).

2022 **Manufacturing Laboratory-I (**ME 208, 0-0-4-2-2) co-taught Mechanical Engineering undergraduate students during August- December 2022 (E-70, Feedback-4.54/5).

2022 **Computer Integrated Design and Manufacturing Systems** (ME 559, 2-0-2-5-3), taught this course as program core/elective to Mechanical Engineering graduate and undergraduate students during Jan-May, 2022 (E=11, Feedback=4.56/5).

2022 **Manufacturing Laboratory-II (**ME 308, 0-0-4-2-2) co-taught as a core lab for Mechanical Engineering undergraduate students during Jan- May, 2022 (E=80, Feedback=3.94/5).

2021 **Additive Manufacturing** (ME549, 3-0-0-6-3), teaching for Mechanical undergraduate, graduate, and PhD students during August- December 2021 (E=23, F=4.32/5).

2021 **Manufacturing Laboratory-I (**ME 208, 0-0-4-2-2) co-taught Mechanical Engineering undergraduate students during c (E=78, F=4.26/5).

2021 **Computer Integrated Design and Manufacturing Systems** (ME 559), taught this course for Mechanical Engineering graduate students during Jan-May, 2021 (E=26, F=4.16/5).

2021 **Manufacturing Laboratory-II (**ME 308) co-taught for Mechanical Engineering undergraduate students during Jan- May, 2021 (E=85, F=3.95/5).

2020 **Additive Manufacturing** (ME549), teaching for Mechanical undergraduate, graduate, and PhD students during August- December 2020 (E=37).

2020 **Manufacturing Laboratory-I** (ME 208) co-taught for Mechanical Engineering undergraduate students during August- December 2020 (E=62, F=4/5).

2020 **Computer Integrated Design and Manufacturing Systems** (ME 559), taught this course for Mechanical Engineering graduate students from Jan-May, 2020.

2021 **Manufacturing Laboratory-II (**ME 308) co-taught for Mechanical Engineering undergraduate students during Jan- May, 2020.

2019 **Manufacturing Systems** (MEL 402), taught this course for Mechanical Engineering undergraduate students during July-Dec, 2019.

2019 **Manufacturing Laboratory** (MEP 302) co-taught for Mechanical Engineering undergraduate students during July-Dec, 2019.

2019 **Tinkering lab** (GE 107) co-taught for undergraduate students from Jan-May, 2019.

2019 **Sustainable Design and Manufacturing** (MEL 517) course for PhD and Masters' students during Jan-May 2019.

2018 **Manufacturing Laboratory** (MEP 302) co-taught for Mechanical Engineering undergraduate students during July-Dec, 2018 (Students' feedback: 3.5/5.0-part).

2018 **Manufacturing Systems** (MEL 402), taught this course for Mechanical Engineering undergraduate students during July-Dec, 2018(Students' feedback: 3.3/5.0).

2018 **Sustainable Design and Manufacturing** (MEL 517) course for PhD and Masters' students during Jan-May 2018 (Students' feedback: 3.6/5.0).

2018 **Product design and realization Intermediate, II** (MEP 205) taught for Mechanical Engineering undergraduate students during Jan-May 2018 (Students' feedback: 3.71/5.0).

2017 **Manufacturing Laboratory** (MEP 302) co-taught for Mechanical Engineering undergraduate students during July-Dec, 2017.

2017 **Manufacturing Systems** (MEL 402), taught this course for Mechanical Engineering undergraduate students during July-Dec, 2017.

2017 **Sustainable Design and Manufacturing** (MEL 517) course for PhD and Masters' students during Jan-May 2017.

2017 **Product design and realization Intermediate, II** (MEP 205) co-taught for Mechanical Engineering undergraduate students during Jan-May 2017.

2016 **Product design and realization –I** (GEL 101) co-taught for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering to undergraduate students during Fall 2016.

2016 **Manufacturing Laboratory** (MEP 302) co-taught for Mechanical Engineering undergraduate students during Fall 2016.

2016 **Product design and realization Intermediate, II** (MEP 205) course for Mechanical Engineering undergraduate students during Spring 2016.

2015 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Fall 2015.

2015 **Computer Aided Design and Manufacturing** (MEL 474) co-taught for Mechanical Engineering undergraduate students during Summer 2015.

2015 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Spring 2015.

2014 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Fall 2014.

2014 **Computer Aided Design and Manufacturing** (MEL 474) co-taught for Mechanical Engineering undergraduate students during Fall 2014.

2014 **Design Research** (Mel 467) co-taught for Mechanical Engineering graduate and undergraduate students during the summer 2014.

2014 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Spring 2014.

2013 **Product design and realization Intermediate, II** (MEP 205) co-taught for Mechanical Engineering undergraduate students during Fall of 2013.

2013 **Mechanical engineering** (MEN 100) co-taught for Mechanical Engineering undergraduate students during Fall 2013.

2013 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Fall 2013.

2013 **Sustainable Design and Manufacturing** (MEL 517) co-instructed course for graduate students during Fall 2012.

2013 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Spring 2013.

2013 **Design Research** (Mel 467) co-taught for Mechanical Engineering graduate and undergraduate students during Spring of 2013.

2012 **Mechanical engineering** (MEN 100) co-taught for Mechanical Engineering undergraduate students during Fall 2012.

2012 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Fall 2012.

2012 **Sustainable Design and Manufacturing** (MEL 517) co-instructed course for graduate students during Spring 2012.

2012 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Spring 2012.

2011 **Product design and realization –I** (GEL 101) course for Mechanical Engineering, Computer Science and Engineering, and Electrical Engineering undergraduate students during Fall 2011.

Short-term courses other than IIT Ropar

2010 **Design of cars**, a short course for senior students, Frederick school, Maryland, USA.

2014 **Advanced Aesthetics**, a short course for Master of Design students at the Indian Institute of Science Bangalore.

2003 **Computer-Aided Design**, a short course taught at Kolar Gold Fields

1998 **Computer-Aided Design**, a short course taught at Trichy

IV. Services

Professional services

Editor/ Editorial board member

- Associate Editor, **Smart, and Sustainable Manufacturing Systems**, ASTM (SCI listed).
- Associate Editor, **Frontiers in Manufacturing Technology**, Frontiers (New journal)
- Editorial board member, **Journal of Engineering, Design, and Technology**, Emerald (SCI listed).
- Editorial board member, **International Association of Scientific Innovation and Research (IASIR) journals.**
- Founder editor-in-chief of **International Journal of Product Design**, Serials Publications (http://www.serialspublications.com/journals1.asp?jid=477&jtype=1), 2008-2011.
- Special issue editor of International Journal of Product Lifecycle Management (IJPLM), Special Issue: Developing sustainable products, processes, and services. (http://www.inderscience.com/browse/index.php?journalCODE=ijplm).
- Special Issue editor for **Frontiers in Manufacturing Technology** on "Role of Life Cycle Engineering in Sustainable Development of Plastic Circular Economy" (https://www.frontiersin.org/research-topics/38197/ tps://www.frontiersin.org/research-topics/37238)
- New article collection I am co-editing on "Industry 4.0 and its Applications to Develop Smart Manufacturing Environments". (https://www.frontiersin.org/research-topics/38197/)

Journal reviewer

- *Springer Publisher:* Research in Engineering Design, (many papers), Sadhana, Environmental Science and Pollution Research, Journal of The Institution of Engineers (India): Series C, Environment, Systems and Decisions, Journal of Supercomputing,
- *Taylor and Francis:* Journal of Engineering Design (many papers), Co-Design, Production Planning and Control, International Journal of Design Creativity and Innovation
- *Inderscience:* International Journal of Design Engineering, International Journal of Intelligent Enterprise (IJIE), International Journal of Precision Technology
- *Elsevier:* Design studies, Journal of Manufacturing Processes, SME, Materials Today Proceedings, Technology Forecasting and Social Change (IF=8), Environment Development and Sustainability
- *ASME:* Journal of Mechanical Design
- *IEEE:* T-ASE
- *Cambridge University Press:* Design science

Conference reviewer

- 5th International Conference on PLMSS 2015.
- International Conference on Research into Design (ICoRD'15), Bangalore, India
- International Design Engineering Technical Conferences (IDETC) & Computers and Information in Engineering Conference (CIE), ASME 2014, 2011 and 2009
- IEEE-TASE, 2013, Aston University
- iNaCoMM, 2013. 1st International and 16th National Conference on Machines and Mechanisms, IIT Roorkee.
- ACM SIGCHI Creativity & Cognition 2009 conference, October 27-30, 2009. Berkeley Art Museum & UC Berkeley, USA
- Third International Conference on Design Computing and Cognition, 2008 (DCC, 2008), 23-25 June, Georgia Institute of Technology, Atlanta, USA

- Seventh International Symposium on Tools and Methods of Competitive Engineering (TMCE 2008), April 21-25, 2008, Izmir, Turkey

International program committee member

- 28th CIRP Conference on Life Cycle Engineering, March 10th – 12th 2021, Jaipur, India
- International Programme Committee of the ICORD, 2021.
- International Programme Committee of the ICORD, 2017. 5th International Conference on Research into Design (ICoRD'17), IIT Guwahati, India
- International Programme Committee of the 3rd International Conference on Design Creativity (3rd ICDC), 2014
- International Programme Committee of the ICORD, 2015. 5th International Conference on Research into Design (ICoRD'13), Bangalore, India
- International Programme Committee of the ICORD, 2013. 4th International Conference on Research into Design (ICoRD'13), Bangalore, India

Academic and administrative services in the Department of Mechanical Engineering at IIT Ropar

- Member, ME faculty shortlisting committee (2017-present)
- Member, Departmental purchase recommendation committee (DPRC, 2016-present)
- Member, Departmental financial planning and resource allocation committee (2017-present)
- Member, web development committee (2012-present)
- Member, manufacturing machines, tools, and equipment committee (2013- present)
- Member, standing purchase committee for manufacturing group (13.9.2011-present)
- Member, short listing committee member for SMMEE faculty recruitment (2011, 2012)
- Member, purchase committee of Product design and realization computer laboratory (2013)
- Member, expert talk organization committee (2016-present)
- Member, Departmental Junior Lab Assistant recruitment committee (2016-present)
- Member, Departmental Staff Recruitment Committee (2016-2018)
- Founder faculty, Design research laboratory (2012-present)
- Co-founder faculty, Sustainable design and manufacturing laboratory (2012- present)
- Co-founder faculty, Design studio laboratory (2013-current)
- ME Masters students' batch advisor, 2017 Batch
- Member, Departmental research committee- DPGC (2017-present)
- Faculty advisor (2022 B.Tech, ME, co-batch advisor)

Academic and administrative services at IIT Ropar

- **Chairman(2015-2021)-** initiated the cell and supported IPR for the last few years. The number of IPRs applications have increased from 0 to 72.
- **Nodal officer IPR of IIT Ropar (2015- present).** Able to attract frunding from PSCST of gov. of Punjab.
- **Co-coordinator (HOD Equivalent) of the central workshop (2012-2018).** Initiated and purchased various machines, recurited new staff and designed the new workshop in the main campus.
- Member, Doctoral Committee (DC) for the following students of the department and the Institute: 1. Ashpreet Singh 2. Jaspreet Singh Chahal 3. Ashis Gupta 4. Sameer Gupta 5. Neha Singh Bhakal 6. Saikha Bhatta 7. Harish Kumar Nirala 8. Devi Prasad Dash 9. Mahima Gulati 10. Rajesh Sharma 11. Kirandeep Kaur 12. Sandeep Kumar 13. Vishal Agarawal 14. Amit Patel 15. Mohit Raj Saxena 16. Lakhani Piyush 17. Abhishek Kumar 18. Devi Prasad Dash 19. Siddharth Chauhan 20. Sanjeev Singh Yadav 21. Disha Sharma 22. Nagandra SM 23. Pompi Chetia 24. Parminder Singh
- Member, Web development committee of the institute (2012-present)

- Member, Institute Ranking Committee (2016-present)
- Member, banner and hoarding committee (2012-2015)
- Member, guest house facility committee (2012-2013)
- Member of the selection committee of Junior Attendant (Semi-skilled) (ME) (09.05.2013)
- Member, new campus development committee (2013-2015)
- Member, Institute car purchase and renting committee (2013-present)
- Coordinator of Product design and realization manufacturing laboratory (workshop) (2013-present)
- Developed four products for Rural Technology Action Group (RuTAG) group (2013, 2014)
- Member of Unnat Bharat Abhiyan, IIT Ropar (2015-present)
- Started Intellectual Property Cell (IPR cell) at IIT Ropar and received an initial grant from PSCST (July 2014-present) and coordinating with Patent Information Centre (PSC), Punjab State Council for Science and Technology (PSCST) and Technology Information, Forecasting and Assessment Council (TIFAC), Government of India for patent filing (2013-present)
- Member, **Board of Directors**, IIT Ropar Technology Business Incubator Foundation (TBIF)- 2019- 2022

International conferences/workshops/design exhibitions co-organized

- Workshop conducted: Sunil Sharma, Prabir Sarkar, 2021. Generating Bioinspired design (Biomimicry) for solving problems. 8th International Conference on Research into Design (ICORD 2021). 7-10 January, 2021. IDC School of Design, IIT Bombay.
- Session Chair for Design Ideation, Creativity and Synthesis session in the 8th International Conference on Research into Design (ICORD 2021). 7-10 January, 2021. IDC School of Design, IIT Bombay. India.
- Conducted workshop on "Bio mimicry in design of packaging systems" and "Redesign of a car to improve aesthetics of cars and evaluation of a new method to improve aesthetic appeal of cars" in Chandigarh university for B.Des. students on 19.7.19.
- Conducted 4th Intellectual Property Rights workshop on 17th September, 2018
- Conducted a one-day workshop on IPR at IIT Ropar, 24th Jan 2018.
- Session moderator of Industrial academia conclave (IAC), 2016, IIT Ropar.
- Conducted a one-day workshop on IPR at IIT Ropar, 3 March 2015.
- Session moderator of Industrial academia conclave (IAC), 2015, IIT Ropar.
- Session chair and conducted a workshop on sustainability at the International Conference on Research in Design, ICORD 2015, Bangalore, India, 7-9th January 2015.
- Co-chair of 29th Computers and Information in Engineering Conference (CIE), Product Lifecycle Management for Sustainable Manufacturing (CIE-9-1 PLM-1), ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, August 28 –September 2, 2009, San Diego.
- Indo-US Workshop on Designing Sustainable Products, Services and Manufacturing Systems, Bangalore, India, Aug 18-20, 2009.
- NIST Workshop on Sustainable Manufacturing: Metrics, Standards, and Infrastructure, October 13-15 2009, NIST.
- Research in Product Design, 2007 and 2008, Indian Institute of Science, Bangalore.
- Indo –US Workshop, Engineering design, 2007, Bangalore.
- Green Design Workshop, 2007, Bangalore.
- Ripples 2000, 2005, Indian Institute of Science, Bangalore.
- Technical Program committee member of Prodigy, 1997- a technical symposium, National Institute Technology, Trichy.

External expert

- Faculty recruitment committee as an external expert, MIT- WPI, April 2023.
- Member, selection committee Global Initiative of Academic Networks (GIAN), Ministry of Human Resource Development (MHRD), Government of India.
- Thesis evaluator of several M.Tech various colleges.
- PhD thesis evaluator of a research scholar of IISc, Bangalore
- PhD thesis examiner of 3 students of MNIT, Jaipur.
- PhD thesis evaluator of a student of BITS Pillani.
- External Expert, Research Degree Committee (RDC), Mechanical Engineering, Chandigarh University, Mohali. (2019-present)
- Academic expert, Board of Studies, Industrial Design, Chandigarh University, Mohali. (2019-present)
- Board of Studies, Department of Mechanical Engineering, Chandigarh University, Mohali. (2020-present)

V. Design activities

New product development

- Designed as a lead engineer, the first radio-controlled dozer of India while working for BEML (2000-2002).
- Invented an auto-disposable syringe and patented the design (MAS/2000).
- Designed and developed various industrial projects such as load indicator deck lamps for a dumper (BH85), joysticks for dumpers for hoist control, and new dashboards for dumpers (BH85) for the universal electronic controller.
- Co-developed stubble removing agricultural machine for stopping stubble burning.
- Various consultancy projects were carried out both as a consultant and as a volunteer.
- For portfolio, please visit my website at *www.prabirsarkar.com*

Website developments

- Indo-US workshop website
- CPDM Department website (CPDM), IISc, 2005
- Ideas Lab website, (CPDM), IISc, 2005
- Sustainability standards portal, NIST

Software developments

- Intelligent Designer - Design of Jigs and Press Working Tools using AI (C++, AutoCAD) (BE Project)
- Idea-Transcribe – An aid for design researchers for transcribing protocols (VB, Media player, Spreadsheet)
- Idea-Inspire (in a team) - An aid to help designers generate solutions (VC++, OpenGL)
- Idea-Trigger – An aid to trigger ideas (VB, VC++, OpenGL) (Ph.D. work)
- Planner – Planning software for researchers (VB)

Medical equipment design

2015 Developed ‘Bone alignment measuring system’ along with four students of IIT Ropar and with Dr. Chawan of PGI Hospital, Chandigarh, 2015

2015 Developed “improved surgical cutter for plastic surgery” for Dr. Sunil Gaba of Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, along with Dr. S. S. Padhee and Mr. Sameer Mishra, a summer internship student, 2015

Design exhibitions conducted

2017 Design exhibition at Indian Institute of Technology Ropar in November 2017

2017 Design exhibition at Indian Institute of Technology Ropar in April 2017
2016 Design exhibition at Indian Institute of Technology Ropar in November 2016 (guided products displayed= 16).
2016 Design exhibition at Indian Institute of Technology Ropar in April 2016 (guided products displayed= 8).
2015 Design exhibition conducted for undergraduate students in November 2015 (guided products = 18 approx.).
2015 Design exhibition at Indian Institute of Technology Ropar in April 2015 (guided products displayed= 14).
2014 Design exhibition conducted for undergraduate students in November 2014 (guided products displayed= 18).
2014 Design exhibition conducted for undergraduate students in April 2014 (guided products displayed= 24).
2013 Design exhibition conducted for undergraduate students in November 2013 (guided products displayed= 28).
2013 Design exhibition conducted for undergraduate students in April 2013 (guided products displayed= 28).
2012 Design exhibition conducted for undergraduate students in November 2012 (guided products displayed= 24).
2012 Design exhibition conducted for undergraduate students in April 2012 (guided products displayed= 14).
2011 Design exhibition conducted for undergraduate students in November 2011 (guided products displayed= 28).

VI. Other information

Certificates and Internship Training

2001 FESTO, Bangalore. Electro-Pneumatics certified course, one week, 2001.
2001 Bharat Earth Movers Limited, Kolar Gold Fields. Management Training, one week, 2001
1997 Hindustan Motor, Kolkata. Project: Material Handling in Camshaft section, 15 days, 1997
1996 Ordinance Factory, Kolkata. Project: Study of stabilizer unit of AT Missiles, 15 days, 1996
1996 Jessop and Company Limited, Kolkata.1 month, 1996

Computer knowledge

- Operating Systems: Windows, UNIX, with a good knowledge of Windows administration
- Graphics packages: Coral Draw, Adobe Photoshop, Alias Sketchbook Pro
- Web authoring tools: Dreamweaver
- CAD/CAM packages: SolidWorks, Catia, Rhinoceros, IDEAS, AutoCAD, Pro-E, Inventor
- Programming: Visual Basic, C++
- CNC programming: CNC milling with FANUC, CNC lathe
- Others: Microsoft Office, C-panel admin
- Web developer and system administrator, CPDM Department, Indian Institute of Science, Bangalore, from 1998 to 2000 and from 2003 to 2007

Professional Memberships

- **Fellow of Institute of Engineers, India (F-1241253)**
- **Chartered Engineer (India)** in Mechanical Engineering (F-1241253)
- Member of American Society of Mechanical Engineers (ASME), membership number: 100037361 (2009-current)
- Member of Design Society (DS), UK, membership number: DS00766 (2012-current)
- Member of IEEE (Member #90634796) (2014- 2015)
- Life member of Indian Science Congress Association, membership number: L26809
- Member of SIG, Design Creativity, Design Society (2008-current)
- Member of International Association of Engineers (IAENG) (130646) (2013-current)
- Senior Member, Asia-Pacific Chemical, Biological & Environmental Engineering Society (APCBEES) (100789) (2013-current)

- Life member, Indian Society for Technical Education (LM 107365)

Collaborations

- Prof. Koustuv Dalal, Professor in Public Health Economics, Mid Sweden University, Sweden
- Dr. Chirodeep Bakli, IIT Kharagpur
- Prof. Amaresh Chakrabarti, Professor, Centre for Product Design and Manufacturing (CPDM), Indian Institute of Science (IISc), Bangalore - 560012, India.
- Dr. Sudarsan Rachuri, Federal Program Manager, US Department of Energy. Advanced Manufacturing Office (AMO), Washington D.C.
- Dr. Shaw Feng, Project leader, National Institute of Standards and Technology (NIST), USA.
- Dr. Jae Hyun Lee, Assistant Professor, Industrial and management engineering, College of Engineering, Daegu University, Republic of Korea.
- Prof. Jagjit Singh Srai, Head, International Manufacturing Institute for Manufacturing, Dept. of Engineering, University of Cambridge
- Dr. Mukesh Kumar, Lecturer, Institute for Manufacturing, Dept. of Engineering, University of Cambridge
- Prof. Sameer K. Srivastava, Professor, Operations Management, Indian Institute of Management, Lucknow
- Prof. Hyo Won Suh, Professor, KAIST, South Korea

Prabir Sarkar | Last update: April 2023 | IIT Ropar