

# Dr. Anis Fatima

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## Personal Details

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Gender: Female

Nationality: Pakistani

## Career Objective

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Established practices combined with the new concepts and developments in manufacturing sector have become the underpinnings of any industry. Among the most significant and far reaching changes in manufacturing sector is the sustainable and green manufacturing of the product. Also, it is no longer acceptable to dispose material and waste the energy linked with their manufacturing. My research vision is oriented towards manufacturing issues and challenges of industrial sustainability through reinstating the importance of manufacturing processes. I am ambitious to explore processes at different length of scale and wide process parameters for optimal performance.

## Awards and Accomplishments

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- 2014 A M Strickland Prize  
The Manufacturing Industries Division Board of the Institution of Mechanical Engineers
- International scholarship award for PHD  
The University of Manchester
- Higher studies scholarship award  
NED University

## Career & Experience

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I am affiliated with NED University as an Associate Professor in Department of Industrial and Manufacturing Engineering, where I primarily teach Manufacturing Engineering courses at degree level.

I have obtained my doctorate in Engineering with specialization in Manufacturing from The University of Manchester. My past work as a field engineer was characterized on reverse engineering approaches. This involved geometric modelling of products and

their optimal manufacturing process within a system framework. I have also been involved in quality audits and implementation of statistical procedures for ISO activities for manufacturing industries (automobile vendor) and educational institutes with the aim of quality and, health and safety policy.

I have national and international university teaching experience, with emphasis on manufacturing, at level five, six and seven at The University of Manchester, Coventry University and NED University. In my previous roles I have fulfilled the role of in-charge product development center and computational and metrology laboratories. I also contributed to the participation of women in engineering committees at institutional and industrial levels. I am a member of WISE (women in science and technology) Committee UK. Moreover, I am certified in “Health, Safety and Environment” and “Productivity Tool 5S & Kaizen Management training.

My research interest includes but not limited to, machining, laser processing, energy, surface structuring, sustainable manufacturing and material processing.

## Qualification

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- Academic qualifications:

2011-2015	<b>PhD</b> (Mechanical Engineering), The University of Manchester, United Kingdom
2006-2007	<b>Masters of Engineering</b> (Adv. Industrial & Manufacturing), NED University of Engineering and Technology, Karachi.
2000-2004	<b>Bachelors of Engineering</b> (Industrial & Manufacturing Engg.), NED University of Engg. & Technology, Karachi, Pakistan.

- Professional qualifications:

May 2017	<b>“Quality Management System-Lead Auditor Training”</b> Lloyd’s Register, London UK
March 2010	<b>“Health, Safety and Environment Certification</b> Pakistan Institute of Quality Control, Karachi, Pakistan
April 2004	<b>“Productivity Tool 5S &amp; Kaizen Management”</b> National Productivity Organization, Karachi, Pakistan

- Acquired skills on computing software;

Modeling and simulation: Solid works, Solid Edge (v12), AutoCAD,  
Pro-E (wildfire – 2), Abaqus, ANSYS, Fast blank.

CNC Machining: CNC coder, DEPO CAM, Mill CAM, Nova Turn &Triac

PC, CNC Simulators (Deckel).

Science and Mathematical: Minitab, MATLAB, SPSS, Design expert (v7), Powerlog  
Production and Operation Management Software (POM  
v2.0).

▪ Information Technology:

Reports & DBMS: MS Office XP (Word, Excel, Access & PowerPoint)  
MS Project

## **Research Projects**

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- Contact phenomenon and cutting tool structuring.
- Direct energy demand and CO2 footprints of CNC machine center for sustainable environment.
- Identifying direct energy demands in Wire-cut EDM
- Cultural policies for startup organization.
- Ergonomics in manufacturing industries.
- Statistical Optimization of processes for sustainability.
- Health and Safety implementation at Dubai port.
- Creation plan for textile industry through resource planning.
- Implementation of Industry 4.0 to lean manufacturing
- Optimization of EDM process through machine learning
- Machine learning in supply chain sustainability

# Teaching and Trainings

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Taught and teaching following graduate, undergraduate and corporate level courses;

- ME 521 Automation and Control
- EM 501 Organizational Systems
- IM 417 Health, safety and Environment
- IM 203 Manufacturing Processes
- MS 303 Engineering economy
- TE 505 Advance Statistics
- IM 523 Operation Research
- IM 405 Finite Element analysis
- IM 310 Tool Design
- CE 605 Applied Probability and Statistics
- IM 307 Advance Manufacturing Processes
- IM 307 Advance Manufacturing Processes(@NED and Coventry University)

## Workshops/Teaching (@ The University of Manchester and Coventry University):

21/11/2014	Teaching in higher education
05/12/2011	Laser safety training
02/12/2011	Graduate teaching assistant training
15/11/2011	Academic writing
06/10/2011	Introduction to research essentials

- 102MAE - Mechanical Science
- M04EKM - Study Skills and Research Methods
- 152MAM - Mechanical Science and Mathematics

# Publications

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## Selected outputs

1. **Fatima** A, Wasif M. Use of Taguchi experimental design in an offline optimization estimation of surface finish in machining. Conference proceeding at Mehran University ,17 Jan 2022.
2. Muhammad Wasif, **Anis Fatima**, Aqeel Ahmed and Syed Amir Iqbal Investigation and Optimization of Parameters for the Reduced Springback in JSC-590 sheet metals occurred during the V-bending Process, Transactions of the Indian Institute of Metals.DOI:10.1007/s12666-021-02357-9
3. Asim Zaheer, **Anis Fatima**, Jennifer Rowson, Effective Evaluation and Management of the Risks in Domestic Tasks: Living skills outcome measures has been accepted for publication in the Journal of Engineering Research (JER). The DOI number for this paper will be: 10.36909/jer.11843

4. **Anis Fatima**, Muhammad Wasif and Muhammad Omer Mumtaz, Optimization of process parameters in turning of nuclear graded steel alloy (AISI-410) for sustainable manufacture " has been accepted for publication in the Journal of Engineering Research (JER). The DOI number for this paper will be: 10.36909/10.36909/jer.11239
5. Muhammad Wasif, **Anis Fatima**, Syed Amir Iqbal, Muhammad Tufail, Hassan Karim, Analysis and Optimization of Spring back during the V-bending of Hot-Rolled High Strength Steels (JSH440)" has been accepted for publication in the Journal of Engineering Research (JER). The DOI number for this paper will be 10.36909/jer.11027
6. **Fatima A** and Tufail M. Improving Efficiency of Apparel Manufacturing Through the Principles of Resource Management. 0: 0887302X211005432. DOI: 10.1177/0887302x211005432.
7. Ahmed, Aqeel, Wasif, Muhammad, **Fatima, Anis**, Wang, Liming, Iqbal, Syed Amir. Determination of the feasible setup parameters of a workpiece to maximize the utilization of a five-axis milling machine. Frontiers of Mechanical Engineering. 2021/03/18, 10.1007/s11465-020-0621-3
8. **Fatima A**, M Tufail Improving Productivity through Linear Programming: A Case of Oil Refinery Industry, SAE Technical Paper, 2020-01-5128, doi:10.4271/2020-01-5128.
9. Wasif M, Iqbal S, **A, Fatima A**, Yaqoob S and Tufail M. Experimental investigation for the effects of wire EDM process parameters over the tapered cross-sectional workpieces of titanium alloys (Ti6Al-4V). Mech Sci. 2020; 11: 221-32.
10. **Fatima, A.**, Ahmed, A., Yaqoob, S., & Fahad, M. (2020). Wear comparison of unstructured and structured tungsten carbide. Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology, 234(10), 1658–1668. <https://doi.org/10.1177/1350650120923533>
11. **Fatima, A.**, Zaheer, A., & Fahad, M. (2019). Comparative performance analysis of micro-structured carbide inserts in machining of EN19 alloy steel. Journal of The Brazilian Society of Mechanical Sciences and Engineering, 41, 405.
12. **Fatima A.** and Amir I. Identifying direct electrical energy demand in wire-cut EDM Mehran University research journal <https://doi.org/10.22581/muet1982.2001.16>
13. **Fatima A.** and Mativenga P. Experimental study on cutting performance comparison of structured cutting tools in machining of AISI/SAE 4140. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, DOI: 10.1177/0954405417731464
14. **Fatima A.** and Mativenga P. On the comparative cutting performance of nature inspired structured cutting tool in dry cutting of AISI/SAE 4140. Proceedings of the

- Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, doi: 10.1177/0954405415617930
15. **Fatima A.** and Mativenga P. A comparative study on cutting performance of rake-flank face structured cutting tool in orthogonal cutting of AISI/SAE 4140. The International Journal of Advanced Manufacturing Technology, 2015, vol. 78 (9): 2097-2106.
  16. **Fatima A.** and Mativenga P. T. Performance of flank face structured cutting tools in machining of AISI/SAE 4140 over a range of cutting speeds. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 2016 vol. 230 (1): 3-18
  17. **Fatima A.,** Whitehead D. J. and Mativenga P. T. Femtosecond laser surface structuring of carbide tooling for modifying contact phenomena. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 2014; 228(11): 1325-1337
  18. **Fatima A.** and Mativenga P. Assessment of tool rake surface structure geometry for enhanced contact phenomena. The International Journal of Advanced Manufacturing Technology, 2013: 1-6.
  19. **Fatima A.** and Mativenga P. T. A review of tool–chip contact length models in machining and future direction for improvement. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 2013; 227(3): 345-356.

## Memberships and Affiliations

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- Member WISE (Women in science and Engineering, UK)
- Member Women Tech
- Member Organization for women in science in developing world
- Member Pakistan Engineering council
- Member QEC for Industrial and Manufacturing Department
- Member D-OBE committee
- Reviewer Journal of Mechanical Science and Technology (JMST) – Springer
- Reviewer Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture
- Member syndicate - NED University 2010-20114
- Board Member QEC 2017

## Funding

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- NRPU 2021. (6.0 million) - Development of Additively Manufactured Low-cost Moulds for the Manufacturing of FRP Products” project number 17073.
- NRPU 2021 (4.2 million) - Optimization of Tooling and Machining Parameters for Enhanced Quality of Holes.
- PHD (1.0 million) - Optimization of EDM process through machine learning.