

# Curriculum Vitae



## Personal Information

<b>Name, Surname: Turkish (Iranian)</b>	Muhammed ARAS (Mohammad Rafighi)
<b>Date and Place of Birth</b>	1988 – Tabriz/Iran
<b>Nationality</b>	Turkish-Iranian
<b>Marital status</b>	Married
<b>Address</b>	Başkent University, Fatih Sultan, Bağlıca Kampüsü, Eskişehir Yolu 18.km, 06790 Etimesgut, Ankara
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## Educational Background

Degree	Department	GPA	Name of Institution	Date
Ph.D.	Manufacturing Engineering	4.00/4.00	Department of Manufacturing Engineering, Gazi University, Ankara, Turkey	2014-2018
M.Sc.	Mechanical Education	3.64/4.00	Department of Mechanical Education, Gazi University, Ankara, Turkey	2011-2013
B.Sc.	Mechanical Engineering	2.92/4.00	Department of Mechanical Engineering, Islamic Azad University of Tabriz, Iran	2006-2010

## Abroad Research Experience

No	Name of University	Role	Date
1	Brandenburg University of Technology, Cottbus, Germany	of Rolls-Royce jet engine design project (Erasmus R&D researcher)	06/2017-08/2017
2	Perugia University, Perugia, Italy	(Erasmus R&D researcher)	06/2014-09/2014

## Work Experiences

No	Name of firm/University	Job Title	Date
1	Başkent University Department of Mechanical Engineering	Associate Prof. Dr.	2023-.....
2	Sivas University of Science and Technology Department of Aeronautical Engineering	Associate Prof. Dr.	2022-2023
3	University of Turkish Aeronautical Association Department of Mechanical Engineering	Assistant Prof. Dr.	2018-2022
4	Gazi University Department of Manufacturing Engineering	Teaching Assistant (Not Official)	2014-2018
5	Tractorsazi Factory, Tabriz, Iran	Stager	2008-2009

## Administrative Duties

No	Name of firm/University	Type	Date
1	Sivas University of Science and Technology (SUST)	Head of Department, Aeronautical Engineering Department	2022-2023
2	SUST	Institute of Graduate Studies, Board Member	2022-2023
3	SUST	Faculty of Aviation and Space Sciences, Faculty Committee Member	2022-2023
4	University of Turkish Aeronautical Association (UTAA)	Erasmus Coordinator, Faculty of Engineering	2021-2022
5	UTAA	Internship Coordinator, Mechanical Engineering Department	2021-2022
6	UTAA	Scientific Publications Evaluation Committee Member	2021-2022
7	UTAA	Foreign Students Admission Committee Member	2021-2022

## Certifications

**GRE** Quantitative: **157**  
**Language** English YÖKDİL: **87.50**

## Languages

English, Turkish, Azerbaijani, Persian

## Research Interests

Machining, Hard Turning, Cutting Tools, Optimization, Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), Finite Element Analysis (FEA)

## Ph.D. Thesis (Supervisor: Prof. Dr. Abdulkadir Güllü, Co-Supervisor: Prof. Dr. Metin Orhan)

Design and prototype manufacturing of automatic orthognathic surgery articulator with five degrees of freedom

## M.Sc. Thesis (Supervisor: Prof. Dr. Abdulkadir Güllü)

The design and manufacturing of a supportive device for walking of disabled people

## Publications (Total Number of Citations: 321)

### SCI/SCI-Expanded

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- 1 Roy, S., Ramanuj Kumar, R., Panda, A., Sahoo, A. K., **Rafighi, M.**, and Das, D. (2023) "Machining of super duplex stainless steel: Experimental performance comparison under single and double nozzle pulse mode MQL system using sustainable approach" *Sustainability*, 15(20), No: 15160. DOI: 10.3390/su152015160
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- 2 Özdemir, M., **Rafighi, M.**, and Al Awadh, M., (2023) "Comparative evaluation of coated carbide and CBN inserts performance in dry hard turning of AISI 4140 steel using Taguchi-based grey relation analysis" *Coatings*, 13(6), No: 979. DOI: 10.3390/coatings13060979
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- 3 Al Awadh, M., Kumar, R., İynen, O., **Rafighi, M.**, Özdemir, M., and Pandey, A., (2023) "Machinability comparison of TiCN-Al<sub>2</sub>O<sub>3</sub>-TiN, TiAlN-TiN, and TiAlSiN coated carbide inserts in turning hardened AISI 4340 steel: An experimental and grey-crow search hybrid optimization approach" *Metals*, 13(5), No: 973. DOI: 10.3390/met13050973
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- 4 Kumar, R., Sharma, S., Kumar, R., Verma, S., and **Rafighi, M.** (2023) "Review of lubrication and cooling in computer numerical control (CNC) machine tools: A content and visualization analysis, research hotspots and gaps" *Sustainability*, 15(6), No: 4970. DOI: 10.3390/su15064970
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- 5 Shu, X., Kumar, R., Saha, R. K., Dev, N., Stević, Z., Sharma, S., Bansal, P., and **Rafighi, M.** (2023) "Sustainability assessment of energy storage technologies based on commercialization viability: MCDM Model" *Sustainability*, 15(6), No: 4707. DOI: 10.3390/su15064707
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- 6 Padhan, S., Wagri, N. K., Dash, L., Das, A., Das, S. R., **Rafighi, M.**, and Sharma, P. (2023) "Investigation on surface integrity in hard turning of AISI 4140 steel with SPPP-AlTiSiN coated carbide insert under Nano-MQL" *Lubricants*, 11(2), No: 49. DOI: 10.3390/lubricants11020049
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- 7 **Rafighi, M.**, Özdemir, M., Şahinoğlu, A., Kumar, R., and DAS, S. R. (2022) "Experimental assessment and TOPSIS optimization of cutting force, surface roughness, and sound intensity in hard turning of AISI 52100 steel" *Surface Review and Letters*, 29(11), No: 2250150. DOI: 10.1142/S0218625X22501505
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- 8 Özdemir, M., Şahinoğlu, A., **Rafighi, M.**, and Yılmaz, V. (2022) "Analysis and optimization of the cutting parameters based on machinability factors in turning AISI 4140 steel" *Canadian Metallurgical Quarterly*, 61(4), pp. 407-417. DOI: 10.1080/00084433.2022.2058154
- 
- 9 **Rafighi, M.** (2022) "Effect of shallow cryogenic treatment on surface characteristics and machinability criteria in turning of AISI 4140 steel" *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, 236(5), pp. 2118-2130. DOI: 10.1177/09544089221083467
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- 10 Kumar, R., Pandey, A., Sahoo, A. K., and **Rafighi, M.** (2022) "Investigation of machinability performance in turning of Ti-6Al-4V ELI alloy using firefly algorithm and GRNN approaches" *Surface Review and Letters*, 29(6), No: 2250075. DOI: 10.1142/S0218625X22500755
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- 11 **Rafighi, M.**, Özdemir, M., Das, A., and Das, S. (2022) "Machinability investigation of cryogenically treated hardened AISI 4140 alloy steel using CBN insert under sustainable finish dry hard turning" *Surface Review and Letters*, 29(4), No: 2250047. DOI: 10.1142/S0218625X22500470
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- 12 Şahinoğlu, A., **Rafighi, M.** and Kumar, R. (2022) "An investigation on cutting sound effect on power consumption and surface roughness in CBN tool-assisted hard turning" *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, 236(3), pp. 1096-1108.  
DOI: 10.1177/09544089211058021
- 
- 13 **Rafighi, M.** (2022) "The cutting sound effect on the power consumption, surface roughness, and machining force in dry turning of Ti-6Al-4V titanium alloy" *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 236(6), pp. 3041-3057.  
DOI: 10.1177/09544062211072411
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- 14 Das, A., Kamal, M., Das, S. R., Patel, S. K., Panda, A., **Rafighi, M.**, and Biswal, B. B. (2022) "Comparative assessment between AlTiN and AlTiSiN coated carbide tools towards machinability improvement of AISI D6 steel in dry hard turning" *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 236(6), pp. 3174-3197. DOI: 10.1177/09544062211037373
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- 15 Şahinoğlu, A. and **Rafighi, M.** (2021) "Investigation of tool wear, surface roughness, sound intensity, and power consumption during hard turning of AISI 4140 steel using multilayer-coated carbide inserts" *Journal of Engineering Research*, 9 (4B), pp. 377-395. DOI: 10.36909/jer.8783
- 
- 16 Şahinoğlu, A. and **Rafighi, M.** (2021) "Machinability of Hardened AISI S1 Cold Work Tool Steel using Cubic Boron Nitride" *Scientia Iranica*, 28(5), pp. 2655-2670. DOI: 0.24200/SCI.2021.55772.4398
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- 17 **Rafighi, M.**, Al Shehabi, S., Özdemir, M. and Kaya, M. T. (2021) "Sustainable Hard Turning of High Chromium AISI D2 Tool Steel using CBN and Ceramic Inserts" *Transactions of the Indian Institute of Metals*, 74(7), pp. 1639-1653. DOI: 10.1007/s12666-021-02245-2
- 
- 18 **Rafighi, M.**, Özenç, O., Kaya, M. T., Özdemir, M. and Akyıldız, H. K. (2021) "Machinability of the AISI M2 high-speed steel using CBN insert" *Journal of the Chinese Society of Mechanical Engineers*, 42(4), pp. 403-412.
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- 19 Tanabi, H. and **Rafighi, M.** (2020) "Turning machinability of alloyed ductile iron compared to forged EN 1.7131 steel" *Materials Testing*, 62(12), pp. 1259-1264. DOI: 10.1515/mt-2020-621216
- 
- 20 Şahinoğlu, A. and **Rafighi, M.** (2020) "Optimization of cutting parameters with respect to roughness for machining of hardened AISI 1040 steel" *Materials Testing*, 62(1), pp. 85-95. DOI: 10.3139/120.111458
- 
- 21 Şahinoğlu, A. and **Rafighi, M.** (2020) "Investigation of vibration, sound intensity, machine current, and surface roughness values of AISI 4140 during machining on the lathe" *Arabian Journal for Science and Engineering*, 45(2), pp. 765–778. DOI: 10.1007/s13369-019-04124-x.
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- 22 Salimiasl, A., Erdem, A. and **Rafighi, M.** (2017) "Applying a multi sensor system to predict and simulate the tool wear using of artificial neural networks" *Scientia Iranica*, 24(6), pp. 2864-2874.  
DOI: 10.24200/sci.2017.4247
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### SCI/SCI-Expanded (Under Review)

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- 23 Kumar, R., **Rafighi, M.**, Özdemir, M., Şahinoğlu, A., Simic, V., Singh, J., Haber, R., and Verma, A., (2024) "Modelling and Optimization of Hard Turning by Machine Learning: A Case Study on AISI 52100 Steel" *Complex & Intelligent Systems*.
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24 Roy, S., Das, A., Kumar, R., Das, S. R., **Rafighi, M.**, and Sharma, P. (2024) "Exploring the viability of alternative cooling-lubrication strategies in machining processes: A comprehensive review on the performance and sustainability assessment" *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*.

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25 Aghazadeh, R., **Rafighi, M.**, Kumar, R. and Al Awadh, M., (2024) "Material gradation effects on twisting statics of bi-directional functionally graded micro-tubes" *Materials*.

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26 Kumar, R., **Rafighi, M.**, Al Awadh, M., İynen, O., Özdemir, M., and Pandey, A., (2024) "Experimental comparison and TOPSIS-Sine Cosine algorithm-based hybrid optimization in sustainable machining on medium-hardened steel" *Alexandria Engineering Journal*.

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27 İynen, O., Özdemir, M., Ekşi, A. K., **Rafighi, M.**, and Akyıldız, H. K. (2024) "Comparison of CBN, Ceramic, and Carbide Inserts Performance in Turning of Medium Hardened AISI 4340 Steel using Taguchi-based Gray Relational Analysis" *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*.

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28 İynen, O., Özdemir, M., Ekşi, A. K., **Rafighi, M.**, and Akyıldız, H. K. (2024) "Machinability investigation of AISI 4340 steel considering machining sound, current, and power consumption" *Surface Review and Letters*.

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## E-SCI

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29 Erdem, S., Özdemir, M., **Rafighi, M.**, and Yavuz, M., (2023) "Effect of cutting parameters on surface roughness and cutting forces in hard turning of 1.2367 hot work tool steel" *Journal of Polytechnic*, 26(3), pp. 1071-1077. DOI: 10.2339/politeknik.1059568

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30 **Rafighi, M.** (2021) "Comparison of Ceramic and Coated Carbide Inserts Performance in Finish Turning of Hardened AISI 420 Stainless Steel" *Journal of Polytechnic*, 24(3), pp. 1295-1302.  
DOI: 10.2339/politeknik.892146

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31 Salimiasl, A., and **Rafighi, M.** (2017) "Vibration and cutting force based tool wear monitoring and estimating via by fuzzy logic" *Journal of Polytechnic*, 20(1): 111-120.

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## TR-Dizin

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32 Salimiasl, A., and **Rafighi, M.** (2017) "Investigation of Recent Developments in Tool Condition Monitoring during Machining Operations" *Düzce University Institute of Science and Technology*, 5(1): 314-337.

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## International Proceedings

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33 Bilim, S. E., **Rafighi, M.**, and Dengiz, S. "Machinability of GG25 Gray Cast Iron Using Carbide Inserts" *Materials Today: Proceedings*.

This paper is presented in the 4<sup>th</sup> International Conference on Recent Advances in Mechanical Engineering Research and Development, Bhubaneswar, India (21/07/2023)

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34 **Rafighi, M.** (2021) "Influence of turning parameters on the radial, tangential, and feed forces during turning of Ti-6Al-4V titanium alloy" 2<sup>nd</sup> *Sciences and Innovation Congress*, Ankara, Turkey (23/05/2021)

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35 **Rafighi, M.**, and Güllü, A. (2021) "Design and fabrication of automatic orthognathic surgery articulator" 1<sup>st</sup> *International Congress on Engineering Sciences and Multidisciplinary Approaches*, Istanbul, Turkey (23/02/2021)

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**Rafighi, M. (2020)** "Surface roughness prediction during finish hard turning of AISI 420 martensitic stainless steel using ceramic insert" **9<sup>th</sup> International Scientific Research Congress- Science and Engineering (UBAK)**, Ankara, Turkey (12/12/2020)

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**Rafighi, M. (2020)** "Effect of Cutting Parameters on Machinability of Hardened AISI 52100 Bearing Steel" **37 Academic Perspective Procedia**, 3(1): 474-481. DOI: 10.33793/acperpro.03.01.94

This paper is presented in the **8<sup>th</sup> International Symposium on Innovative Technologies in Engineering and Science**, Bursa, Turkey (23/10/2020).

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**Rafighi, M., and Güllü, A. (2014)** "The design, analysis and manufacturing a supportive device to walking disabled people" **10<sup>th</sup> International Conference on Mechatronic Systems and Materials, (MSM 10/07/2014)**, 87-95, Opole, Poland.

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## Book Chapters

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**Rafighi, M., Güllü, A., and Orhan, M., (2021)** "Operating principle of automatic articulator" **Engineering and Technology Management**, Güven Plus Group, 348-368.

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**Özdemir, M., Türkcan, Ö., Yılmaz, V., and Rafighi, M. (2021)** "Optimization of machining parameters in turning of AISI 4340 steel" **Advances in Machinery and Digitization**, İksad Yayınevi, 51-78.

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**Şahinoğlu, A. and Rafighi, M. (2019)** "Investigation of the relationship between temperature, sound intensity and surface roughness related to tool wear during turning of hardened AISI 4340 material" **Energy and Environmental Studies for the Near Future**, Akademisyen Kitabevi, 65-79.

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## Other Publications

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**Rafighi, M., and Güllü, A. (2017)** "Design of a novel walking assistance device for people with walking disabilities" **International Journal of Engineering & Technology**, 6(4): 191-194.

DOI: 10.14419/ijet.v6i4.8656

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## Administered Graduate Theses

**Samet Emre BİLİM, (2023)** "Investigation of Machinability of GG25 Gray Cast Iron" **Mechanical and Aeronautical Engineering**, University of Turkish Aeronautical Association.

(Master Thesis, English, 1. Supervisor: Assoc. Prof. Dr. Suat DENGİZ, 2. Supervisor: **Assoc. Prof. Dr. Muhammed ARAS**)

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## Academic organization (congress, symposium)

### Organizing Committee Membership

### Date

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| 1. International Congress of Engineering Sciences and Multidisciplinary Approaches | 23/02/2021 |
| 2. International Congress of Engineering Sciences and Multidisciplinary Approaches | 18/09/2021 |
| 3. International Congress of Engineering Sciences and Multidisciplinary Approaches | 10/02/2022 |
| 4. International Congress of Engineering Sciences and Multidisciplinary Approaches | 03/11/2022 |
| 5. International Congress of Engineering Sciences and Multidisciplinary Approaches | 25/02/2023 |

## Editorial Experience

International Journal of Mechanical Engineering and Applications

11/2020-03/2024

## Review Experience

International Advanced Researches and Engineering Journal, Mechanics & Industry, Metallurgical Research & Technology, Journal of the Institution of Engineers (India) Series C, Cukurova University Journal of the Faculty of Engineering, Journal of Materials Engineering and Performance, Experimental Techniques, Surface Review and Letters, Journal of Polytechnic, Manufacturing Technologies and Applications, Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, Advances in Materials and Processing Technologies, Gazi University Journal of Science Part A Engineering and Innovation, International Journal on Interactive Design and Manufacturing, Scientific Report, Journal of Advanced Thermal Science Research, Plos One, Emerging Materials Research, Gazi University Journal of Science, Alexandria Engineering Journal, Advances in Manufacturing, Steel Research International, Engineering Reports

## Courses Taught

### Bachelor

Technical Drawing, Manufacturing Engineering, Statics, Manufacturing Techniques, Mechanics Design, Heat Transfer, Fundamentals of Mechanical Engineering, CNC Machines, Materials Science and Manufacturing Techniques, Advanced CAD and CAM, Materials Science and Manufacturing Methods for Mechatronics Engineering, Computer-Aided Manufacturing, Computer-Aided Technical Drawing, Mechanical Engineering Orientation, Engineering Mechanics, Mechanics of Materials, Senior Design Project I, Senior Design Project II, Summer Practice I, Summer Practice II

### Master and Ph.D.

Advanced Manufacturing Techniques, Engineering Analysis for Mechanical Components, Computer Aided Design and Manufacturing

## Patent

**Rafighi, M., Güllü, A., and Orhan, M., (2022)** "Otomatik Artikülatör", Turkish Patent and Trademark Office  
Patent No: 2018 07478

## Honors

- 1 Ranked 1st at the Technology Faculty of Gazi University (2018-Ph.D. GPA)
- 2 Incentive Award III. Business Idea Competition in Gazi University (2015).
- 3 Ranked 2nd in the Mechanical Education Department of Gazi University (2013-M.Sc. GPA)

## Projects

### Scientific Research Projects (BAP)

**Project No:** 2023-GENL-Hav-0011, **Position:** Researcher, **Budget:** 150000 TL

- 1 **Project Title:** Investigation of friction stir lap welding of AISi10Mg aluminum alloy produced by additive manufacturing method to wrought 7075T6 aluminum alloy

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**Project No:** 07/2017-07, **Position:** Researcher, **Budget:** 25000 TL

- 2 **Project Title:** Design and manufacture of the five degrees of freedom automatic orthognathic surgery articulator

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**Project No:** 07/2012-14, **Position:** Researcher, **Budget:** 12000 TL

- 3 **Project Title:** Design and manufacture of a supportive device for walking disabled people

## Technical Skills

Solid Works, CATIA, MINITAB, SWANSOFT, Microsoft Office (**Very Good**), NX, ANSYS, MATLAB, C# (**Beginning**)

## References

- 1 **Prof. Dr. Abdulkadir Güllü**, Department of Manufacturing Engineering, Gazi University, Ankara, Turkey  
(+90 536 255 06 33). [agullu@gazi.edu.tr](mailto:agullu@gazi.edu.tr)

- 2 **Prof. Dr. Ahmet Özdemir**, Department of Manufacturing Engineering, Gazi University, Ankara, Turkey  
(+90 532 542 87 37). [ahmetoz@gazi.edu.tr](mailto:ahmetoz@gazi.edu.tr)

- 3 **Prof. Dr. Ulvi Şeker**, Department of Manufacturing Engineering, Gazi University, Ankara, Turkey  
(+90 532 284 50 83). [useker@gazi.edu.tr](mailto:useker@gazi.edu.tr)

- 4 **Prof. Dr. İhsan Korkut**, Department of Manufacturing Engineering, Gazi University, Ankara, Turkey  
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- 5 **Prof. Dr. Klaus Hoeschler**, Head of Mechanical Engineering, Brandenburg Technical University, Cottbus, Germany  
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