A'Sharqiyah University
Faculty of Engineering
Electronics and Communication Dept.

Mohamed Abd El-Hameed

1. Personnel Data

A'Sharqiyah University, Faculty of engineering, Electrical Engineering Dept.
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2. Short Biography

Mohammed A. El-Hameed. He has been with A'Sharqiyah University since 2021 as assistant professor of electrical power engineering. He received the B.E. degree (with honors) from Zagazig University faculty of Engineering, Zagazig, Egypt in electrical power and machines engineering in 1996, M.Sc. degree in 2000 in the field of electrical power system from the same institute, and the Ph.D. degree from Zagazig University, Egypt, in 2004, in the field of electrical power system (power system control and stability). Mohammed has authored or co- authored several articles published in the international refereed journals and conferences. Dr. El-Hameed has been given many awards for distinct international research publishing from Zagazig University, Egypt. He delivered short courses to worldwide graduated electrical engineers. His current interests include power system optimization, control, stability, FACT devices and application of artificial intelligence to solve power system problems.

3. Education

Degree	University	Date	Comments
Ph. D. Degree in Electrical Engineering	Zagazig University, Egypt	Sept. 2004	**Thesis:** 'Critical Assessment for FACTS Devices Behavior in Improving Power System Dynamics'. **Advisors:** Prof. Zaghlol El-Razaz & Prof. Mohy Mandour.
M.Sc. Degree in Electrical Engineering	Zagazig University, Egypt	May 2000	**Thesis:** 'Power System Analysis using ANN'. **Advisors:** Prof. Zaghlol El-Razaz & Prof. A. Elzain

B.Sc. Degree in Electrical Engineering	Zagazig University, Egypt	May 1996	**Project:** 'Voltage Stability Evaluation by Using Modal Analysis'. **Advisor:** Prof. Zaghlol El-Razaz. **Overall Accumulated:** Very good (83%) with honor – 1st rank of my colleagues and Excellent grade, Final year.

4. Employment

Position	Place	From	To
Associate Professor	A'Sharqiyah University Oman	Feb., 2022	Now
Associate Professor	Zagazig University, Egypt	Feb., 2017	Feb. 2022
Assistant Professor	Zagazig University, Egypt	June, 2014	Feb., 2017
Assistant Professor	King Khaled University, SA	Sept., 2011	June, 2014
Assistant Professor	Zagazig University, Egypt	March, 2011	Sept., 2011
Assistant Professor	Misurata University, Libya	Sept., 2005	March, 2011
Assistant Professor	Zagazig University, Egypt	Nov., 2004	Sept., 2005
Assistant Teacher	Zagazig University, Egypt	Aug., 2000	Nov., 2004
Demonstrator	Zagazig University, Egypt	March, 1997	Aug., 2000

5. Research and Academic Interests

1- Integrating of renewable energy sources in electrical power systems.
2- Modelling of power system components.
3- Power system control and stability.
4- Power system optimization using heuristic techniques.
5- Electrical characteristics of renewable energy sources.

6. Internet sites

Elsevier Scopus Author Identifier	Scopus Author ID: **57191885410** https://www.scopus.com/authid/detail.uri?authorId=57191885410
ResearchGate	https://www.researchgate.net/profile/Mohammed_Abd_El-Hameed
Google Scholar	https://scholar.google.com.eg/citations?user=snJi0MQAAAAJ&hl=ar
ORCID	https://orcid.org/0000-0002-6596-6928
Mendeley	https://www.mendeley.com/profiles/mohamed-abd-elhameed2/
Kudos	https://www.growkudos.com/profiles/112594
Academia	https://zagazig.academia.edu/mohamedabdelhameed
Web of Science	https://www.webofscience.com/wos/author/record/P-4784-2015
Web Page at ASU	https://www.asu.edu.om/Team/Details/409?t=Mohamed%20Abd%20El%20Hameed
Web Page at Zagazig University	http://www.maabdelnaeem.faculty.zu.edu.eg/
Publons	https://publons.com/author/1425161/m-a-el-hameed#profile

7. Published Work (International Journals, Conferences, and Book Chapters)

Refereed International Journal Articles

1. Mahmoud H. El-Bahay, Mohammed E. Lotfy, **Mohamed A. El-Hameed,** 'Effective participation of wind turbines in frequency control of a two-area power system using coot optimization,' Protection and Control of Modern Power Systems, Vol. 8, 2023, pp. 1-15. (doi: 10.1186/s41601-023-00289-8) *JCR ISI Indexed/Scopus Cited*
2. Mohamed Khalil Hammad, Mohammed Elsayed Lotfy, **Mohamed A El-Hameed**, 'Power quality enhancement of hybrid PV-wind system using D-STATCOM,' International Journal of Renewable Energy Research, Vol. 13, No. 1, 2023, pp. 504-514. (doi: 10.20508/ijrer.v13i1.13662.g8708) *Scopus Cited*
3. Mahmoud H. El-Bahay, Mohammed E. Lotfy, **Mohamed A. El-Hameed,** 'Computational methods to mitigate the effect of high penetration of renewable energy sources on power system frequency regulation: A comprehensive review,' Archives of Computational Methods in Engineering, Vol. 30, 2023, pp. 703-726. (doi: 10.1007/s11831-022-09813-9) *JCR ISI*

Indexed/Scopus Cited

4. **Mohamed A. El-Hameed**, Rizk M. Rizk-Allah, Attia A. El-Fergany, 'Frequency control of hybrid microgrid comprising solid oxide fuel cell using hunger games search,' Neural Computing and Applications, Vol. 33, 2022, pp. 20671-20686. (doi: 10.1007/s00521-022-07512-x) *JCR ISI Indexed/Scopus Cited*
5. Mohamed Khalil Hammad, **Mohamed A El-Hameed,** 'Voltage sag enhancement of hybrid PV-wind system,' The Egyptian Int. J. of Eng. Sci. Tech., Vol. 27, No. 2, 2022, pp. 49-56. (doi: 10.21608/EIJEST.2021.81501.1073)
6. D. Emad, **M. A. El-Hameed,** A. A. El-Fergany, 'Optimal techno-economic design of hybrid PV/wind system comprising battery energy storage: Case study for a remote area,' Energy Conversion and Management, Vol. 249, 2021, pp. 114847. (doi: 10.1016/j.enconman.2021.114847) *JCR ISI Indexed/Scopus Cited*
7. Ahmed Hesham Abd El-Kareem, **Mohamed Abd Elhameed**, Mahmoud M. Elkholy, 'Effective damping of local low frequency oscillations in power systems integrated with bulk PV generation', Prot. Control Mod. Power Syst., 2021, Vol. 6, no. 41, pp. 6-41. (doi: 10.1186/s41601-021-00219-6) *Scopus Cited*
8. Rizk M. Rizk-Allah**, Mohamed A. El-Hameed**, Attia A. El-Fergany, 'Model parameters extraction of solid oxide fuel cells based on semi-empirical and memory-based chameleon swarm algorithm', Int. J. of Energy res., 2021, Vol. 45, No. 15, pp. 21435-21450. (doi: 10.1002/er.7192) *JCR ISI Indexed/Scopus Cited*
9. Mahmoud M. Elkholy, **Mohamed A. El-Hameed**, Attia A. El-Fergany, 'Artificial ecosystem-based optimiser to electrically characterise PV generating systems under various operating conditions reinforced by experimental validations,' IET Renw. Power Gener., Vol. 15, 2021, pp. 701-715. (doi: 10.1049/iet-rpg.2019.0186) *JCR ISI Indexed/Scopus Cited*
10. Ahmed H. Abd-Elkareema, **Mohamed A. Elhameed**, Mahmoud M.Elkholy, 'Designing optimal power system stabilizer for synchronous generator with and without damper windings,' The Egyptian Int. J. of Eng. Sci. Tech., Vol. 34, 2021, pp. 65-75.
11. **Mohamed A. El-Hameed**, Mahmoud M. Elkholy, Attia A. El-Fergany, 'Three-diode model for characterization of industrial solar generating units using Manta-rays foraging optimizer: Analysis and validations,' Energy Conversion and Management, Vol. 291, 2020, pp. 113048. (doi: 10.1016/j.enconman.2020.113048) *JCR ISI Indexed/Scopus Cited*
12. Nehad A. Demerdash, **Mohamed A. El-Hameed**, Mahdy M. El-Arini, Ezzat A. Eisawy,

'Optimal feed-water level control for steam generator in nuclear power plant based on meta-heuristic optimization,' Journal of Radiation Research and Applied Sciences, Vol. 13, No. 1, 2020, pp. 468-484. (doi: 10.1080/16878507.2020.1748350) *JCR ISI Indexed/Scopus Cited*

13. Nehad A. Demerdash, **Mohamed A. El-Hameed**, Mahdy M. El-Arini, Ezzat A. Eisawy, 'Linearized mathematical method for PWR dynamic simulation,' Arab Journal for Nuclear Sciences and applications, Vol. 53, No. 2, 2020, pp. 78-86. (doi: 10.21608/ajnsa.2019.18780.1290)
14. D. Emad, **M. A. El-Hameed,** M. T. Yusef, A. A. El-Fergany, 'Computational methods for optimal planning of hybrid renewable microgrids: A comprehensive review and challenges,' Archives of computational methods in engineering, Vol. 27, 2020, pp. 1297-1319. (doi: 10.1007/s11831-019-09353-9) *JCR ISI Indexed/Scopus Cited*
15. **M. A. El-Hameed**, Mahmoud M. Elkholy, A. A. El-Fergany, 'Efficient frequency regulation in highly penetrated power systems by renewable energy sources using stochastic fractal optimiser,' IET Renw. Power Gener., Vol. 13, No. 2, 2019, pp. 2174-2183. (doi: 10.1049/iet-rpg.2019.0186) *JCR ISI Indexed/Scopus Cited*
16. E. A. El-Hay, **M. A. El-Hameed,** A. A. El-Fergany, 'Optimized parameters of SOFC for steady state and transient simulations using interior search algorithm', Energy, Vol. 166, 2019, pp. 451-461. (doi: 10.1016/j.energy.2018.10.038) *JCR ISI Indexed/Scopus Cited*
17. E. A. El-Hay, **M. A. El-Hameed,** A. A. El-Fergany, 'Improved performance of PEM fuel cells stack feeding switched reluctance motor using multi-objective dragonfly optimizer', Neural Computing and Application, Vol. 31, 2019, pp. 6909-6924. (doi: 10.1007/s00521-018-3524-z) *JCR ISI Indexed/Scopus Cited*
18. M.G. El-sayed, **M.A. El-Hameed**, M.M. El-Arini, 'Effective network reconfiguration with distributed generation allocation in radial distribution networks using water cycle algorithm', The Egyptian International Journal of Engineering Sciences and Technology, Vol. 28, 2019, pp. 9-21.
19. E. A. El-Hay, **M. A. El-Hameed,** A. A. El-Fergany, 'Performance enhancement of autonomous system comprising proton exchange membrane fuel cells and switched reluctance motor', Energy, Vol. 163, 2018, pp. 699-711. (doi: 10.1016/j.energy.2018.08.104) *JCR ISI Indexed/Scopus Cited*

20. Mahmoud M. Elkholy, **M. A. El-Hameed**, A. A. El-Fergany, 'Harmonic analysis of hybrid renewable microgrids comprising optimal design of passive filters and uncertainties', Electric Power Systems Research, Vol. 163, No. PA, 2018, pp. 491-501. (doi: 10.1016/j.epsr.2018.07.023) *JCR ISI Indexed/Scopus Cited*
21. E. A. El-Hay, **M. A. El-Hameed**, A. A. El-Fergany, ' Steady-state and dynamic models of solid oxide fuel cells based on Satin Bowerbird Optimizer', International Journal of Hydrogen energy, Vol. 43, No. 31, 2018, pp. 14751-14761. (doi: 10.1016/j.ijhydene.2018.06.032) *JCR ISI Indexed/Scopus Cited*
22. Menna S. El-Saeed, **Mohamed A. El-Hameed**, Amal F. AbdElGwaad, 'Crow search algorithm for allocation of multi-type distributed generation in unbalanced radial distribution system', The Egyptian International Journal of Engineering Sciences and Technology, Vol. 25, 2018, pp. 7-23.
23. **M. A. Elhameed**, A. A. El-Fergany, 'Water Cycle Algorithm-based Economic Dispatcher for Sequential and Simultaneous Objectives Including Practical Constraints', Applied Soft Computing, Vol. 58, 2017, pp. 145–154. (doi: 10.1016/j.asoc.2017.04.046) *JCR ISI Indexed/Scopus Cited*
24. M. Ali, **M. A. Elhameed**, M. A. Farahat, 'Effective Parameters' Identification for Polymer Electrolyte Membrane Fuel Cell Models Using Grey Wolf Optimizer', Renewable Energy, 2017, Vol. 111, No. c, pp. 455-462. (doi: 10.1016/j.renene.2017.04.036) *JCR ISI Indexed/Scopus Cited*
25. A. A. El-Fergany, **M. A. Elhameed**, 'Efficient Frequency Controllers for Autonomous Two-area Hybrid Microgrid System Using Social-Spider Optimiser', IET Gener. Transm. Distrib., 2017, Vol. 11, No. 3, pp. 637– 648. (doi: 10.1049/iet-gtd.2016.0455) *JCR ISI Indexed/Scopus Cited*
26. E.E. Ali, **M.A. Elhameed**, A.A. El-Fergany, M.M. El-Arini, "Parameter Extraction of Photovoltaic Generating Units Using Multi-Verse Optimizer", Sustainable Energy Technologies and Assessments, 2016, Vol. 17, pp. 68-76, (doi: 10.1016/j.seta.2016.08.004) *JCR Scopus Cited*
27. **M. A. Elhameed**, A. A. El-Fergany, 'Water cycle algorithm-based load frequency controller for interconnected power systems comprising non-linearity', IET Gener. Transm. Distrib., 2016, pp. 3950-3961 (doi: 10.1049/iet-gtd.2016.0699) *JCR ISI Indexed/Scopus Cited*
28. Mahmoud M. Elkholy, **M. A. Elhameed**, " Minimization of Starting Energy Loss of Three Phase

Induction Motors Based on PSO And Neuro Fuzzy Network ", International Journal of Power Electronics and Drive System (IJPEDS), Sept. 2016, Vol. 7, No. 3, pp. 1038-1048.

29. **M. A. Elhameed**, Mahmoud M. Elkholy, " Optimal Power Flow Using Cuckoo Search Considering Voltage Stability", WSEAS TRANSACTIONS on POWER SYSTEMS, Volume 11, 2016, Pages 18-26.
30. Mahmoud M. Elkholy, **M. A. Elhameed**, " Efficient Sensorless Speed Control of Induction Motors Using Hybrid Grey Wolf Optimizer and Neural Network", International Review of Automatic Control (I.RE.A.CO.), March 2016, Vol. 9, N. 2, Pages 55-63.
31. Mahmoud M. Elkholy, **M. A. Elhameed**, " Braking of Three Phase Induction Motors by Controlling Applied Voltage and Frequency Based on Particle Swarm Optimization Technique", International Review of Automatic Control (I.RE.A.CO.), March 2015,Vol. 8, N. 2, Pages 106- 112.
32. Mahmoud M. Elkholy, **M. A. Elhameed**, "Neuro-Genetic Adaptive Optimal Controller For Dc Motor", International Journal of Power Electronics and Drive System (IJPEDS), Sept. 2014, Vol. 4, No. 3, Pages 393-399.
33. **M. Abdelhameed**, "Adaptive Secondary Voltage Control by VAR Resourses Set Point Optimization", Journal of Electrical Systems (JES), Dec. 2010, Vol. 6, Issue 4, Pages 548-555.
34. Z.S. Elrazaz , **M. A. Elhameed**, " ANN-based PSS for Multi-Machine Power System", Arabian Journal for Science and Engineering, 2001, Vol. 6, No. 1B, pp. 29-40.

Refereed Conference Papers

35. H. M. N. Fiyad, H. M. B. Metwally, **M. A. El-Hameed**, Mohammed A. H. Abozied, 'Real Time Embedded Target Detection and', J. Phys.: Conf. Ser., 2020, Vol. 1454, pp. 012007, International Conference on Advanced Information Systems and Engineering, 23–25 August 2019, Cairo, Egypt. (doi:10.1088/1742-6596/1454/1/012007).
36. M. Goda, **M. A. El-Hameed**, M. El-Arini, 'Single and Multi-Objective Optimal Allocation of Multi-Type Distributed Generators in Radial Distribution Networks Using Water Cycle Algorithm', 21st International Middle East Power Systems Conference (MEPCON), Tanta University, Egypt, 17-19 December 2019.
37. Ashraf Abd El-Raouf, Mahmoud M. Elkholy, **M. A. Elhameed**, M. El-Arini, 'Effect of Antlion Optimized Facts to Enhance Three Phase Induction Motor Dynamic Performance', 19th International Middle East Power Systems Conference (MEPCON), Menoufia University,

Egypt, 19-21 December 2017, pp. 277-286.

38. A. Tawfiq, **M. A. Elhameed**, A. A. Elgawad, 'Antlion Optimizer For Effective Integration Of Distributed Generation In Radial Electrical Distribution Networks', 19th Middle East Power Systems Conference (MEPCON), Menoufia University, Egypt, 19-21 December 2017, pp. 248-262.
39. Sattar gaber, **M. Abdelhameed**, "Ability of FACTS Devices to Improve Transient Stability of Power Systems", 5th Libyan Arab International Conference on Electrical and Electronic Engineering, LAICEEE, Oct. 23-26, 2010, Triboli, Libya.
40. **M. A. Elhameed**, Z.S. Elrazaz, "An Artificial Neural Network Based Power System Stabilizer for Multi-Machine Power System", Middle East Power System Conference (MEPCON), 2000, Cairo, Egypt.

Book Chapters

1- **Mohamed A. El-Hameed**, Mahmoud M. El-Kholy, and Attia A. El-Fergany, Effective frequency control in renewable dominated power systems, in Sandeep Dhundhara, Yogendra Arya and Ramesh C. Bansal, Advanced Frequency Regulation Strategies in Renewable-Dominated Power Systems, 2024, Academic Press, ISBN 978-0-323-95054-1. https://doi.org/10.1016/B978-0-323-95054-1.00008-1

2- Enas A. El-Haya, **Mohamed A. El-Hameed**, Hany M. Hasanienc, and Attia A. El-Fergany, Frequency control of hybrid autonomous microgrids comprising electric vehicles aggregator based on lightning attachment procedure optimizer, in Sandeep Dhundhara, Yogendra Arya and Ramesh C. Bansal, Advanced Frequency Regulation Strategies in Renewable-Dominated Power Systems, 2024, Academic Press, ISBN 978-0-323-95054-1. https://doi.org/10.1016/B978-0-323-95054-1.00012-3

8. Teaching Work for Undergraduate Engineers

1- Electrical Circuits
2- Electrical Measurements
3- Automatic Control
4- Power System Engineering
5- Power System Analysis
6- Power System Control and Stability
7- Power System Economics

8- Renewable energy sources.
9- Electrical Utilization
10- Electrical Machines
11- Differential Equations
12- High Voltage Engineering
13- Power System Protection
14- Teaching and supervised lab activities.

9. Teaching Work for Postgraduate Engineers

1- Economical Operation of Electrical Power Systems.
2- Power System Control including VAR control, FACT devices, active power and frequency control, applications of AI techniques.

10. Graduation Projects Supervisions

1- Optimal power flow for electrical power systems.
2- Load calculations and electrical installation in buildings.
3- Effective damping of power system oscillations using power system stabilizers.
4- Reactive power compensators and their applications on power systems.
5- Supplementary damping controllers for FACTs devices.
6- Fault location on overhead transmission lines.
7- Sequential control in its application on production lines.
8- Smart homes and automation using KNX.
9- Application of ETAP on power systems analysis.

11. M.SC. and Ph.D. Supervision

Degree	Title	Remarks
M.Sc.	The effect of SVC on the dynamic performance of three-phase induction motors	Completed
M.Sc.	Effect of Shading on PV Cells Performance and Its connection with Electrical Power System	Completed
M.Sc.	A new strategy to solve the problem of intermittency in renewable energy (solar – wind) using hydrogen energy storage	Completed

M.Sc.	Studying the impact of DG technologies on the power quality of distribution networks	Completed
M.Sc.	Optimization of distributed generation to enhance characteristics of electrical distribution systems	Completed
Ph.D.	Design and implementation of detection and warning laser system based on stepper motors	Completed
M.Sc.	Effective network reconfiguration with distributed generation allocation in radial distribution networks	Completed
Ph.D.	The effect of electric grid instability on the safety of nuclear power plant	Completed
M.Sc.	Optimal design and planning of renewable based microgrids	Completed
M.Sc.	Effective power system oscillations damping using energy storage devices	Completed
M.Sc.	Power quality improvement by using d-facts in power systems comprising renewable sources	In progress
M. Sc.	Effective Frequency Regulation for Power Systems with Increased Renewable Energy Penetration	In progress

12. Industrial Technical Consultation

1- Electrical inspection for 10th of Ramadan city hospital.

2- Electrical inspection for the emergency unit in Zagazig university hospital.

3- Electrical calculations for Belbais agriculture farm (more than 1000 Fedans).

13. Special activities and professional skills

- Programming using MATLAB and its Toolbox (Simulink, Nnet, Fuzzy, Control, Optimization)
- Power system analysis software packages (ETAP, Power factory, …)
- Soft skills (Communication with others, presentation skills, etc.)
- Artificial Intelligence (AI) simulation including neural networks, fuzzy logic and heuristic optimization.
- TOEAFL
- ICDL

14. Memberships

- Senior member of the IEEE.
- Member of the Egyptian syndicate of engineers.

15. Refereeing and Reviewing for Journals/Conferences

- IET Renewable Power Generation, UK
- AEJ - Alexandria Engineering Journal, Elsevier, Egypt 3- Energy, Elsevier, UK
- IEEE Transactions on Energy Conversion, USA
- Electric power system research.
- Renewable and Sustainable Energy Reviews, Netherlands
- Electric Power Components and Systems, Taylor and Francis, USA 7- International Journal of Renewable Energy Technology
- Electrical Engineering, Springer
- International Journal of Power Electronics and Drives, Malaysia

16. Prizes, Appreciations and Awards

1- Certificate of Appreciation, Zagazig University, Egypt, 1996. (Ranked First on The Electrical Power Dept. Faculty of Engineering on graduation 1996)

2- Awarded Zagazig university prize for distinguished publication (2021) in international journal ranked Q_1.

3- Awarded Zagazig university prize for distinguished publication (2020) in international journal ranked Q_1.

4- Awarded Zagazig university prize for distinguished publication (2019) in international journal ranked Q_1 and Q_2.

5- Awarded Zagazig university prize for distinguished publication (2018) in international journal ranked Q_1 and Q_2.

17. Training/Workshops

1- Course title:" Power system control" For Libyan Power System Company – many times, among the topics covered for this course: Speed governors, area generation control, voltage control, FACT devices, voltage stability, excitation systems.

2- Course title:" Power system stability" for Libyan Power System Company, among the topics covered for this course: Transient stability, steady state stability, power system modeling for stability studies, voltage stability, static indices for voltage stability.

3- Course title:" Power flow in Electrical power system" for Libyan Power System Company,

among the topics covered for this course: Data preparation for load flow study, bus classification, numerical methods to solve load flow problem, calculating system losses and power flow through system branches.

4- Course title:" Electrical wiring and load calculations" for Saudi Electrical Engineers, among the topics covered for this course: national electric code, load estimation of residential units, low voltage circuit breakers, cable sizing and selection, lighting system design.

18. Academic Programs Development

Program	University	Role	Year
Smart Electric Power Grids Engineering	Zagazig University - Egypt	Preparing course descriptions for electrical power courses	2020
Bachelor of Science in Energy Engineering	A'Sharqiyah University - Oman	Preparing course descriptions for some of electrical power courses	2022

19. Attended Conferences

Name of conference	Year
MEPCON'2000 (Cairo, Egypt, December, 23-25, 2000).	2000
MEPCON'2000 (Mansoura, Egypt, December, 23-25, 2001).	2001
MEPCON'2015 (Monofia, Egypt, December, 23-25, 2015).	2015
20th International Middle East Power Systems Conference (MEPCON'18 by Cairo University, December, 18-20, 2018).	2018
21th International Middle East Power Systems Conference (MEPCON'19 by Tanta University, December, 17-19, 2019).	2019
Green hydrogen summit, Muscat, Oman, 5-7 December 2022	2022
Hypothesis XVIII, Hydrogen Power Theoretical and engineering solutions, international symposium, Muscat university, Oman, October 23-25, 2023	2023

20. Research Grants

1- PI of a project entitled 'Characterization and Optimization of Proton Exchange Membrane Fuel Cell for Electric Vehicles Applications' funded by the block funding program from the ministry of high education, research and innovation, Oman with a fund of 19600 OMR.