

Curriculum Vitae
Mohamed Tarek El-Wakad

Cuurrently: Associate Dean, Community service & environment
Professor, Biomechanical Engineering
Faculty of Engineering
Helwan University, Egypt



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Academic Credentials

Degree	Institute	Address	Fields	Dates
Ph.D.	Rensselaer Polytechnic Institute	Troy, New York, USA	Measurements, Computer modeling, Biomaterials, Biomechanics, Stress analysis	1/82 – 8/88
M.Sc.	George Washington University	Washington, D.C., USA	Measurements, Medical Engineering	9/79 – 6/81
B.Sc.	Helwan University	Helwan, Cairo, Egypt	Mechanical Engineering	9/70 – 6/75

Ph.D. Thesis Title: Measurement and Prediction of Loading on Dental Implants: Transducer Design and Finite Element Modeling.

Employment History

Employer	Dates	Rank	Nature of work	Contract
Helwan University	6/11 - now 4/02 – 6/11 11/88 – 3/02	Professor Assoc. Prof. Assist. Prof.	Teach/ Research/ Administration	Full time
King Saud University	3/04 – 7/10	Assoc. Prof	Teach/ Research/ Administration	Full time
American University, Cairo (AUC)	1/ 01- 2/04 6/92 – 9/97	Assoc. Prof.	Teach	Part-time
Misr University for Science & Technology (MUST)	2/02 – 2/04	Assoc. prof.	Teach	Part-time
Salalah Technical College	9/97 – 9/00	Assist. Prof.	Teach/Adminst	Full time
Higher Technological Institute (10 th of Ramadan)	9/89 – 9/97	Assist. Prof.	Teach	Part-time
Maritime Arab Transport Academy	1/93 – 6/93	Assist. Prof.	Teach	Part-time
Rensselaer Polytechnic Inst.	1/82 – 6/88	Assistant	Teach/ Research	Full-time
George Washington University	9/80 – 6/81	Assistant	Teach	Part-time

Courses Taught (University level)

University	Course Title	Teach freq.	Graduate	Language
Helwan Univ., King Suad Univ (KSU) & Misr University for Science and Technology (MUST)	Solid mechanics	3		Arabic / English
	Strength of materials	9		
	Numerical Methods & Computer Application	3	X	
	Engineering Economy	7		
	Eng. Measurements	5		
	Eng design	12		
	Medical Instrumentation	2		
	Biomechanics/biomaterials	14		
	Modeling of Biomed. systems	3	X	
American University, Cairo, Computer Science, (1994 – 1997) (2000 – 2004)	Numerical Methods	5	X	English
	CAD/CAM	2	X	
	ACAD, Windows & MS- Office, ICDL, project management	20		
Salalah Tech. Industrial College, Sultante of Oman (1997 – 2000)	Engineering Materials	4		English / Arabic
	Engineering Process	3		
	Mechanics	6		
	ACAD	3		
	Computer application	6		
	System Engineering	3		
	Database Software (Dbase 4)	5		
10th Ramadan Higher Tech. Inst.	Computer Programming (C)	3		Arabic / English
	Database Software (Dbase 4)	5		
Rensselaer Polytechnic Inst.	Math. Methods for Biomedical Engineers	3		English
	Biomaterials / Biomechanics	5		
	Bio-instrumentation	3		
George Washington Univ.	Computer Logic Design	1		English

Publications

1. **M. T. El-Wakad** , J. Hipp, J.B. Brunski, "Development of system for simultaneous measurement of three force component on dental implants" 10th Annual meeting of the American Society for Biomaterials, Washington, D.C., USA, April 1984. **(from Ph.D.)**.
2. **M. T. El-Wakad** , J.B. Brunski, "Measurement of three force component on dental implants in dogs", 15th Annual meeting of American Association for Dental Research, Washington, D.C., USA, March 1986. **(from Ph.D.)**.
3. **M. T. El-Wakad** , J.B. Brunski, "An Osseointegrated dental implant instrumented to sense bite forces", 15th Annual meeting of American Association for Dental Research, Washington, D.C., USA, March 1986. **(from Ph.D.)**.

4. J. Wenz, C. Berthoud, **M. T. El-Wakad**, J. Hipp, J.B. Brunski, "Dental implant design: Biomechanics and interfacial tissues", *J. of Oral Implantology*, 12: 365 – 377, 1986. **(from Ph.D.)**.
5. J.B. Brunski, **M. T. El-Wakad**, "Biomechanics of Dental implant with and without "intramobile element": Computer modeling", 17th Annual meeting, American Assoc. Dental Research, Canada, March 1988. **(from Ph.D.)**.
6. H.G. El Charkawi, **M. T. El-Wakad** & M.E. Naser; "Modifications of Osseointegrated implant for distal extension prosthesis" *Journal Prosthetic Dentistry*, St Louis, Mo., USA, Vol. 64, pp: 469 – 472, October 1990. **(ISI journal)**
7. H.G. El Charkawi, & **M. T. El-Wakad**; "Stress Analysis of a new modified osseointegrated implant for distal extension prosthesis", *Al-Azhar Dental Journal*, Al-Azhar University, Vol. 7, No. 3, pp: 335 – 346, May 1992.
8. H.G. El Charkawi, K.A. Zikry & **M. T. El-Wakad**; "Stress Analysis of two osseointegrated implants for distal extension prosthesis", *Al-Azhar Dental Journal*, Al-Azhar University, Vol. 7, No. 3, pp: 347 – 362, May **1992 AND** *Journal Prosthetic Dentistry*, St Louis, Mo., US, Vol. 76, pp: 614 – 622, **1994. (ISI journal)**
9. **M. T. El-Wakad**; "Measurement of load distribution on dental implants supporting a bridge", *Engineering Research Bulletin*, Faculty of Engineering, Mataria, Helwan University, Vol. 4, pp: 97- 110, August 1993.
10. **M. T. El-Wakad** , J.B. Brunski, "Development of a multidirectional transducer to measure loading on dental implants", 3rd Inter Conf. Faculty of Engineering, Al-Azhar Univ., Cairo, Egypt, 12, 1993. **(from Ph.D.)**.
11. **M. T. El-Wakad**; "Measurement of cutting force in turning using simple dynamometer", *Engineering Research Bulletin*, Faculty of Engineering, Mataria, Helwan University, Vol. 3, pp: 107- 130, June 1994.
12. H.G. El Charkawi, N.A. Yehia, **M. T. El-Wakad** & Y. Mohieldin; "Load distribution in osseointegrated implant supporting extended and non-extended dentures", *Egyptian Dental Journal*, Faculty of Dental and Oral Medicine, Cairo University, Vol. 41, pp: 1347 – 1356, 1995.
13. H.G. El Charkawi, & **M. T. El-Wakad**; "Effects of Splinting on load distribution of extracoronal attachments with distal extension prosthesis in-vitro", *Journal Prosthetic Dentistry*, St Louis, Mo., USA, Vol. 76, pp: 315 – 320, September 1996. **(ISI journal)**
14. H.G. El Charkawi, Y. O. Mady, A. Abdel Moneam, & **M. T. El-Wakad**; "Stress Analysis of different prosthodontic restorations with tilted posterior abutments", *Egyptian Dental Journal*, Faculty of Dental and Oral Medicine, Cairo University, Vol. 44, pp: 3309 – 3317, 1998.
15. **M. T. El-Wakad**; "In-vitro model to evaluate the effect of attachment designs on stresses transferred to the surroundings in implant-retained overdentures", 7th Cairo Univ. International Conference on Mechanical Design and Production, Faculty of Engineering Cairo University, Cairo 15-17 February 2000.
16. M. Abdelhay, **M. T. El-Wakad**; "Stresses Induced in Abutment Teeth due to Long Span Bridge (A Case Study)", 4th International Implantology Conference, Egyptian Scientific Society for Dental Implantologist, Cairo 3-5 April 2001.
17. **M. T. El-Wakad** , A. El-Assal; "Stresses around two bio-ceramic implants used as abutments for partial denture", *Journal of Engineering & Applied Science*, Faculty of Engineering, Cairo University, Vol. 48, No. 4, pp:793 – 806, August 2001.
18. **M. T. El-Wakad**; "Biomechanical analysis of prosthesis designs used in Treatment of tilted molar", *Engineering Research Bulletin*, Faculty of Engineering, Mataria, Helwan University, December 2001.

19. **MT El-Wakad**; Comparison of the permanent deformation of two clasp designs under the simulated action of insertion and removal. Biomedical Eng. Conference, Cairo University, p: 99 – 103, 24 – 25 December 2002.
20. Ashraf Abdel Moneam Amer, Ashraf Email Iskandar, & **M. T. El-Wakad**; "Management of a terminal questionable abutment in Kennedy Class II cases (a stress analysis study)", Egyptian Dental J. 50(1) (January): 5-10, 2004..
21. Ashraf Email Iskandar, Iman Eltaftazani & **M. T. El-Wakad**; "Effect of abutment type on stresses transmitted to supporting structures in implant supported partial dentures", A stress analysis study. Egypt. Dental J. 50(3)(July): 1593-1601, 2004.
22. Nagi W. Fahmi, H.G. El Charkawi, Ashraf Email Iskandar & **M. T. El-Wakad**; " Evaluation of implant site on the stresses transmitted under distal extension implant supported removable partial denture", Cairo Dental J. 20(3) Part II (September): 499-502, 2004.
23. Ashraf Email Iskandar, Shereen A. Amin & **M. T. El-Wakad**; "Evaluation of the effect of abutment splinting in tooth-implant supported fixed restorations", Cairo Dental J. 20(3) Part II (September): 535-538, 2004.
24. Bendjaballah MZ, **MT El-Wakad**; "Prediction of the optimum number of teeth supporting a long fixed partial denture: A finite element model study. 12th International Conference of Machine design and production (UMTIK2006), Kusadasi, Turkey, September 5 – 8, 2006 AND Alazhar J. of Dental Sciences, 305 – 312, 2008.
25. Bendjaballah MZ, Al-Arabi A, **MT El-Wakad**; Smooth versus threaded-neck dental implant designs using finite element analysis. 12th Saudi International Dental Meeting – Integrating Science into Dental Practice, 12 – 14 April, 2008 AND Egyptian Dental Journal, Cairo, 54(2):1353 – 1360, 2008
26. **MT El-Wakad**; Evaluation of stresses and displacement in different clasp-retained partial dentures: In-vitro study. 12th Saudi International Dental Meeting – Integrating Science into Dental Practice, 12 – 14 April, 2008.
27. Elsarnagawy TD, **MT El-Wakad**; Investigating the Prospective Use of Fibre-Optics-based Sensors in Dentistry. Technisches Messen, Germany, Vol. 75(3): 207 – 211, 2008. **(ISI journal)**
28. Elsarnagawy TD and **MT El-Wakad**; Effect of embedding technique in fibre-optic-based force sensor for dentistry: Nano-strain analysis. International conf. on precision measurement and 53 Intern. Sc. Colloquium, Germany 7-12 Sep. 2008 AND Technisches Messen, Germany, Vol. 76(7-8):378-381, 2009. **(ISI journal)**
29. **MT El-Wakad**, Effect of splinting in a fixed partial denture on bone response: FEM study. in 4th European Congress for Medical and Biomedical Engineering, eMBEC "Engineering for health", Antwerp, Belgium, 23 – 27 November, 2008 AND Egyptian Dental Journal Vol. 55(1):1999-2005, 2009.
30. **MT El-Wakad** and Elsarnagawy TD; A Fibre Optic Sensor for Ambiguity Measurement of Apparent Strain Produced by Electrical Strain Gauge-Transient-Heating-Effect. IEEE International Instrumentation & Measurement Technology conference (I2MTC 2010), Austin, Texas USA, IEEE Instrumentation & measurement Society, 3-6 May 2010 AND Technisches Messen, Germany, Vol. 77(5):305-308, 2010. **(ISI journal)**
31. EMTM Agamy, **MT El-Wakad**; In-vitro stresses and displacement in unilateral distal extension partial denture. Egyptian Dental Journal Vol. 56(3):1473-1489, 2010.
32. **MT El-Wakad**, Bendjaballah MZ; Effect of neck thread sizes versus smooth neck on stress distribution in immediately an delayed loaded dental implants: finite element study. Academy of Osseointegration 27th Annual meeting, March 1-3, 2012 in Phoenix, Arizona, USA.

Thesis Supervision

No	Title	Degree	University	Dates
1	Comparing different retainers of various asymmetric distal extension removable partial dentures	M.Sc.	Faculty of Dentistry, Ain Shams Univ.	1/04 – 9/08
2	Evaluation of implant diameter effect on stress transmission under mandibular overdentures	Ph.D.	Faculty of Oral and Dental Medicine, Cairo University	2002 – 2005
3	Stress analysis induced by distal extension prosthesis with extended extra-coronal attachment	M.Sc.		2002 – 2006
4	Evaluation of implant site on the stresses transmitted under distal extension implant supported removable partial denture	M.Sc.		2001 – 2004
5	Evaluation of sectional partial denture for upper posterior bounded saddle	M.Sc.	Faculty of dent., Tanta Univ.	2001 – 2004
6	Load distribution with different superstructure designs of osseointegrated implants	Ph.D.	Faculty of Oral and Dental Medicine, Cairo University	6/89 – 5/93
7	Stress analysis study of a modified endosseous implant for distal extension prosthesis	M.Sc.		4/90 - 8/91
8	Effect of Splinting on load distribution with extra-coronal attachments in mandibular distal extension removable partial denture	M.Sc.		4/93 – 11/94
9	The relation between two types of clasps and their liability for permanent deformation	M.Sc.		5/93 – 10/94
10	Stress analysis of bar-connected copings vs. conventional copings in complete dentures	M.Sc.		3/94 – 5/97
11	Stresses transmitted to the principal abutment in unilateral distal extension base partial denture	M.Sc.		2/96 – 9/97

Refereeing engineering articles and thesis in KSA

1. **KACST proposal review** "Signal processing for cardiac mapping" May-June 2009.
2. **M.Sc. King Abdel Aziz Univ.** "fracture behavior of poly-methyl_acryl", 3/6/1428 (18/6/2007)
3. The Effect of Muscle Fatigue on Knee Flexor to extensor torque ratios and knee dynamic stability”, Arabian Journal for Science and Engineering, **King Fahd University of Petroleum & Minerals** April 10, 2006.
4. Evaluation of Saudi school furniture available in the local market: biomechanical and psychological based study”, **The 12th International Conference on Machine Design and Production, 05 - 08 September 2006, Kuşadası, Turkey** March 2006.
5. Some properties of dynamically vulcanized EPDM/polypropylene thermoplastic” **Journal of King Abdul-Aziz Univ.** Jan 2005.
6. Industrial noise and its effect on workers in Palestinians industrial plants” **Journal of King Abdul-Aziz Univ.** May, 2004

Notes & Books

Title	Authors	Dates	Publisher/University
AutoCAD (Elementary)	Single	97 & 03	Cairo, American Univ. (notes)
Engineering Economy	Single	90-92	Helwan University (notes)

Workshops and Seminars attended

1. Several seminars at Helwan University (e.g. accreditation, conference organization, international scientific publication).
2. Several seminars and workshops in accreditation and quality related topics at King Saud university (Sep. 2009 – June 2010).
3. Workshop on "Establishing a biomedical engineering maintenance program-criteria, procedures and methods. **Riyadh Intercontinental, 12 January 2008.**
4. Workshop on "Development of Staff abilities in specialty", Held in **King Saud University, Riyadh, KSA, 12/2007 for 5 days**
5. First workshop on "Medical devices problem reporting in the health care facilities, organized by **Saudi Food & Drug administration (FDA), Riyadh, KSA, 29 – 30 November, 2005.**
6. Workshop on "Application of new technology in Education", Held in **King Saud University, Riyadh, KSA, 12/2004**
7. Workshop on "Effective evaluation of student performance", **American University Cairo, 8 March, 2003.**

Research grants (completed, on going, submitted)

1. **Investigator in a team of 4**, (Grant amount of 900,000 SR over a 3 year period) supported by King Abdel-Aziz city for Science and Technology, titled "Custom-made implants: hip, knee & dental", **Started September 2009.**
2. **Primary Investigator**, small grant (25,000 for 1 year) reference number (27/41/أ ب) titled "Optimum number of teeth to support a fixed partial denture: Finite element modeling" academic year 2006/2007. **Completed** on time.

Other University Contributions

a) In King Saud University

No	Activity	Nature of Activity
1	Accreditation	Dept representative in ABET & NCAAA accreditation
2	Curriculum development	Biomed Tech. Dept, Aljoaf Univ., 1426 (2004)
		Community college, Riyadh, 2003 & 2004 first & second draft
3	Student Internship	In charge of dept internships since 1426 - 2/1431 (2005 – 1/2010)
4	New lab.'s	Head of committee for initiation, furnishing and tender betting for biomechanics lab
5	Student affairs	Member, Add/Drop committee from 1425 to 1430 (2004 to 2009)

b) In Helwan University

No	Activity	Nature of Activity
1	Curriculum development	Participated in the development, updating and modifying the current curriculum, Biomedical Eng. Dept, Helwan (Sept.2003)
2	Council & committee membership	Faculty Council 2002-2004 & 95/96
		Department Council 2001 – 2004, 88/89 & 93/94
		Class schedule committee (several times)
		Tenders and equipment inspection committee (several times)
3	projects & grants	Principal member in a proposal for funding through TEMPUS grants to establish lab for calibration of biomedical equipment
		Principal member in two different teams who obtained funds for two-computer lab's for the Production Eng. Dept. (1995-1996)
		Participated in establishing biomedical engineering lab's
4	Library committee	Participated in selection and purchase of scientific textbooks and references
5	Student advising and student's activity	Advisor for Second year Biomed. Eng. students

b) In Salah Technical Industrial College

No	Activity	Nature of Activity
1	Curriculum development	Participated in the development, writing contents of some courses, and review of final draft.
2	Council & committee membership	Department Council 1997/2000
		Member in the committee for interviewing computer technicians
		Permanent member in the Purchase Committee of Eng. Dept.
		Tenders and equipment inspection committee
3	Lab. administration	Supervision on layout, preparation, & furnishing of computer lab's
		Participated in selection of scientific textbooks and references

Society Services

Activity	Subject	Place	Date
Article	Overlap between scientific fields	Salalah Technical Industrial college magazine	1/2000
Short courses	Operations Research	American University, Cairo	6/93 - 9/97 & 2001 - 2004
	Engineering Economy		
	AutoCAD (elementary & advanced)		
	Windows & Application Software		
	Application Software	Private training centers	11/92– 9/97

Scientific & Cultural Society Membership

Society	Dates	Affiliation
Biomedical Engineering Society	1986	Member
Society of Experimental Mechanics	1986 – 1989	Member
National Geographic	1983 – 1984	Member
Egyptian Engineers Syndicate	1975 – Now	Member

Honors and Awards

Award Title	Awarded by	Nature of award	Place	Date
Excellence in Teaching	American University	Certificate of Appreciation	Cairo	01/02 00/01 96/97
Fellowship	Fulbright Organization	2 years study at USA	USA	79 - 81
Excellence in language	American Consulate/ Operation Cross Roads Africa	Visit to USA, Helwan Univ. representative	USA	7 – 8/78 (6weeks)
Excellence Award	Egyptian Engineers Syndicate	Medal of honor & Certificate of Appreciation	Cairo, Egypt	10/75
Merit Scholarship	Helwan University	Monthly Gratuity	Helwan Univ.	73/74

Other Activities & Hobbies

Title	Nature	Dates
Football (outdoors)	Intramural championship (RPI, USA)	1985 & 1986
Football (indoors)	Intramural championship (RPI, USA)	1984