

Curriculum Vitae

Professor. Hisham Ibrahim - Ph.D., P.Eng., Professor of Mechanical Engineering

EXECUTIVE PROFILE

Distinguished academic leader and mechanical engineering professor with **30+ years** of progressive experience in higher education administration, program development, and applied engineering research. Proven track record of institutional leadership, having successfully served as Head of School of Mechanical Engineering overseeing seven specialized departments and achieving multiple international accreditations. Expert in applied engineering education, industry partnerships, and innovative program development with extensive experience in both Middle Eastern and North American academic environments.

Core Leadership Competencies

- **Academic Leadership:** Led comprehensive engineering programs serving 1,000+ students across seven departments
 - **Accreditation Excellence:** Secured NAQAAE institutional and program accreditations through strategic planning and documentation
 - **Applied Research Innovation:** \$2M+ in research funding with focus on practical engineering solutions and industry applications
 - **International Experience:** Academic and research experience in Egypt, Canada, and expertise in Gulf region higher education
 - **Industry Integration:** Extensive consulting experience with vehicle manufacturers, defense contractors, and prosthetics industry
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EDUCATION

- **Research Fellowship** | University of Toronto, Canada | 2018
- **Ph.D. in Mechanical Engineering** | Concordia University, Montreal, Canada | 2009
- **M.Sc. in Mechanical Engineering** | Military Technical College, Cairo, Egypt | 2000
- **B.Sc. in Mechanical Engineering** | Military Technical College, Cairo, Egypt | 1995

Professional Certification: Licensed Professional Engineer (P.Eng.) and Certified Vehicle Structural Design Consultant, Egyptian Engineering Syndicate

SENIOR LEADERSHIP EXPERIENCE

HEAD OF SCHOOL OF MECHANICAL ENGINEERING

Military Technical College, Cairo, Egypt | *January 2022 – December 2023*

- **Strategic Leadership:** Directed comprehensive School of Mechanical Engineering with seven specialized departments including Mechanical Design, Production, Automotive, Mechatronics, covering 1,000+ undergraduate and graduate students
- **Accreditation Achievement:** Led successful NAQAAE institutional accreditation (July 2023) and mechanical engineering program accreditation (November 2022), positioning institution among elite accredited engineering programs regionally
- **Academic Innovation:** Spearheaded transition from traditional to credit-hour system, improving student engagement by 40% and curriculum delivery efficiency
- **Research Infrastructure:** Engineered state-of-the-art computational laboratory with 22 individual terminals and high-performance computing stations, supporting advanced research initiatives
- **Faculty Development:** Guided scientific council decisions and facilitated interdisciplinary collaboration across engineering disciplines

HEAD OF AUTOMOTIVE DEPARTMENT

Military Technical College, Cairo, Egypt | *September 2019 – January 2023*

- **Program Excellence:** Achieved department accreditation and “Best Head of Department” awards for four consecutive years (2019-2022)
- **Laboratory Modernization:** Completely revamped automotive department laboratories, enhancing practical learning capabilities and industry relevance
- **Student Innovation:** Pioneered first unmanned vehicle competition (2016), fostering creativity and technological advancement among 200+ student participants
- **Industry Partnerships:** Established strategic relationships with automotive manufacturers for homologation testing and research collaboration

PROFESSOR AND SENIOR FACULTY MEMBER

Military Technical College, Cairo, Egypt | *September 2009 – Present*

- **Academic Progression:** Advanced from Assistant Professor (2009) to Associate Professor (2016) to Full Professor (2022)
- **Graduate Supervision:** Successfully supervised 15+ M.Sc. and Ph.D. students in advanced mechanical engineering research
- **Curriculum Development:** Designed and implemented innovative courses in electric vehicle design, crashworthiness analysis, and AI applications in engineering

APPLIED RESEARCH AND INDUSTRY EXPERTISE

Research Focus Areas

- **Applied Engineering Solutions:** Vehicle design, testing, and homologation with direct industry applications
- **Sustainable Transportation:** Led homologation of first electric buses in Egypt (SETIBUS & HIGER), establishing regulatory framework
- **Advanced Manufacturing:** 3D printing applications for prosthetics and automotive components using carbon fiber composites
- **Defense Technology:** Protective structure design for vehicles against ballistic and IED threats per NATO 4569 standards
- **Artificial Intelligence:** Integration of AI in vehicle design and predictive maintenance applications

Key Research Projects and Industry Impact

- **Heavy Vehicle Design:** Led design and testing of 4x4 2.5-ton payload truck and 70-ton semi-trailer systems
- **Sustainable Mobility:** Developed compact electric vehicle with integrated solar panels for urban commuting
- **Medical Technology:** Created optimized prosthetic foot using 3D printing and carbon fibers, reducing costs by 60%
- **Safety Innovation:** Designed blast mitigation seats and protective structures, adopted by regional defense contractors
- **Industrial Development:** Developed feasibility study for prosthetics manufacturing complex in Egypt

Research Excellence Metrics

- **Publications:** 25+ peer-reviewed journal articles and international conference papers
 - **Impact:** Highly cited research in vehicle safety, composite materials, and biomechanics
 - **Industry Recognition:** Innovation Award for 3D Printed Carbon Fiber Prosthetic Limb (2019)
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TEACHING AND CURRICULUM EXCELLENCE

Undergraduate Program Leadership

Core Engineering Courses: Mechanical Design, Strength of Materials, Finite Element Analysis, Theory of Machines, Numerical Methods for Engineers, CAD and CAE for Engineers.

Applied Technology Courses: Automotive Engineering, Vehicle Design, Vehicle Structural Analysis, Materials Selection.

Interdisciplinary Integration: Engineering Economics, AI Applications, Sustainable Engineering Design

Graduate Program Development

Advanced Specializations: Nonlinear FEA, Design Optimization, Composite Materials, Crashworthiness Analysis, Design of Experiments.

Applied Research Methods: Design of Experiments, Advanced Vehicle Design, Biomechanics Applications.

Pedagogical Innovation

- **Experiential Learning:** Integrated hands-on projects, industry case studies, and real-world problem solving
 - **Technology Integration:** Advanced simulation software (ANSYS, LS-DYNA, SolidWorks) in curriculum
 - **International Standards:** Aligned programs with Canadian and international engineering education standards
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PROFESSIONAL SERVICE AND RECOGNITION

Editorial and Review Service

- **Journal Reviewer:** Journal of Engineering and Science in Medical Diagnostics and Therapy, ASME Open Journal of Engineering
- **Conference Leadership:** ASME IMECE, International Conference on Applied Mechanics and Mechanical Engineering
- **Academic Assessment:** International Undergraduate Research Conference, multiple regional engineering conferences

Awards and Honors

- **Institutional Accreditation Award** (2023)
 - **Best Head of Department Awards** (2019-2022)
 - **Innovation Award** for 3D Printed Carbon Fiber Prosthetic Limb (2019)
 - **University Teaching Achievement**, Concordia University (2008)
 - **Multiple Career Performance Awards** (1995-Present)
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TECHNICAL EXPERTISE AND INDUSTRY QUALIFICATIONS

Engineering Software Mastery

- **Design and Analysis:** SolidWorks, ANSYS, LS-DYNA for structural optimization
- **Data Analytics:** MATLAB, Minitab for statistical analysis and research applications
- **Specialized Applications:** Vehicle homologation testing, accident reconstruction, biomechanical analysis

Industry Certifications

- **Professional Engineer (P.Eng.):** Licensed consultant in mechanical design
 - **Vehicle Homologation Expert:** Certified for testing and certification per ISO standards and UN regulations
 - **Safety Analysis Specialist:** NATO 4569 standards compliance for protective vehicle systems
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STRATEGIC VISION FOR ENGINEERING TECHNOLOGY EDUCATION

- **Applied Learning Excellence:** Champion of hands-on, industry-integrated education preparing graduates for immediate workforce contribution
 - **Innovation and Entrepreneurship:** Foster student creativity through competitions, research projects, and startup incubation
 - **Industry Partnership Development:** Build strategic relationships with regional and international technology companies
 - **Sustainable Technology Focus:** Lead initiatives in renewable energy, electric vehicles, and environmentally conscious engineering
 - **International Collaboration:** Leverage global academic and industry networks for program enhancement and student opportunities
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REFERENCES

Available upon request. Professional references include senior academic administrators, industry partners, and international research collaborators.
