Gulen Ozkula

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PROFILE

Research Interests

- Seismic design, evaluation and rehabilitation of steel structures
- Cyclic stability, modeling, and design of steel columns
- Experimental methods in earthquake engineering
- High-performance steel materials
- Performance-based earthquake engineering
- Seismic risk assessment and collapse prevention using artificial intelligence
- Community Resilience to Natural Hazards

EDUCATION

2021 - 2023 — **Istanbul University**
Executive MBA

2019 - 2020 — **Tokyo Institute of Technology**
Postdoctoral Researcher, Department of Architecture and Building Engineering
Advisor: Prof. Kikuo Ikarashi

2017 - 2018 — **University of California, San Diego**
Postdoctoral Researcher, Structural Engineering
Advisor: Prof. Chia-Ming Uang

2011 - 2017 — **University of California, San Diego**
PhD, Structural Engineering
Thesis: Seismic Behavior, Modelling and Design of Wide-Flange Steel Columns for Special Moment Frames
Advisor: Prof. Chia-Ming Uang

2009 - 2011 — **University of Illinois at Urbana Champaign**
Master of Science, Civil and Environmental Engineering
Thesis: High Strength Steel for Seismic Resistance of Beam-to-Column Connections: Novel Metal Investigation

2003 - 2007 — **Celal Bayar University, Manisa, Turkey**
Bachelor of Science, Civil Engineering
Valedictorian

2004 - 2007 — **Anadolu University, Eskisehir, Turkey**
Associate Degree, Business Administration

RESEARCH EXPERIENCE

University of California, San Diego
Structural Engineering Department
Graduate Student Researcher — **September 2011 – 2017**

- ✓ **Advisor**: Prof. Chia-Ming Uang
- ✓ **Swaged Bulkhead Verification**

Findings: Thin steel plates with welded stiffeners are extensively used in ship structures. General Dynamics NASSCO studied the use of swaged bulkheads as non-load bearing components in order to reduce the overall cost of ship design, construction, and life cycle maintenance. To investigate their application for load carrying structural component, both experimental and analytical studies was conducted at University of California, San Diego. In my first year as PhD student I worked on "*Swaged Bulkhead Analysis Verifications: Full-Scale Testing of Swaged and Bulb Stiffened Bulkheads*" project. Finite element models are validated by experimental data and it was concluded that swaged bulkheads were shown to be 63%

stronger than bulb bulkheads.

- ✓ **Built-up Box Columns**

Findings: A total of three full-scale built-up box column welded connections with reduced beam section (RBS) were tested. The testing program was in support of the design development of a new 24-story San Diego Central Courthouse facility to investigate the moment frame connection prequalification limits of AISC 358 for effective, economic and reliable application of steel SMF with large built-up box columns in high seismic regions. Results of finite element model of specimens were validated by experimental data. Primary issues investigated in the testing program included evaluating connection response with respect to: i) the use of electro-slag welding (ESW) process for making the continuity plate complete-joint-penetration groove weld; ii) RBS geometry and beam-to-column force transfer mechanism; and iii) modifications needed to improve connection response.

- ✓ **Deep Wide-Flange Beam-Columns**

Findings: Steel Special Moment Frame (SMF) is preferred for seismic force-resisting system for its architectural flexibility and high ductility. To meet the story drift limit specified in building code, design engineers prefers to use deep columns for their high in-plane flexural stiffness about the strong axis. However, unlike plastic hinging at the beams, steel deep beam-columns at large inelastic deformations associated with strong earthquake ground motions is limited, at best. To fill this gap, twenty-five deep (W24) columns were cyclically tested to (i) generate an experimental database, and (ii) evaluate the adequacy of design requirements of deep columns at AISC 341 and ASCE 41. First phase of the project included five W24 sections (W24×55 to W24×176) to cover a wide range of element slenderness ratios for local buckling as well as member slenderness ratios for lateral-torsional buckling. Second phase of the research covers another twenty-three specimens with different section depth (W30, W24 and W18) to provide more data to cover a wider range of section and member slenderness ratios. Similar to Phase I specimens, first batch of Phase II specimens were selected to investigate the effect of slenderness ratios. In addition, the boundary condition effect and varying axial load effects is also investigated. Utilizing a total of forty-six experimental test data in addition to parametric studies with over one-hundred different sections, new acceptance criteria will be proposed for the ASCE-41 standard.

University of Illinois at Urbana Champaign
Civil and Environmental Engineering Department **August, 2009 - August, 2011**

- ✓ **Supervisor**: Prof. Amr Elnashai
- ✓ **Advanced Steel Materials for Seismic Design**
- ✓ **Research**: research and knowledge about high strength steel (HSS) lagged, preventing its widespread applicability in seismic resistance structures. Due to the lack of sufficient theoretical and experimental studies regarding ductility, deformation of structures, and rotational capacity of connections made by HSS, current codes recommend that connections remain in elastic range. Semi-rigid connections with components made from new bainitic steel, an alloy possessing greater ductility, strength and weldability due to its particular microstructure formation.

Celal Bayar University,
Civil Engineering Department
Manisa, Turkey **September 2003 – July 2007**

- ✓ **Supervisor**: Prof. Umit Gokkus
- ✓ **Submarine Pipelines**
- ✓ **Research**: Senior thesis, "Plastic Design of Submarine Pipelines using the Influence Coefficients and Time History based on SAP 2000," used Stokes' theory pertaining to third order waves to create a theoretical model for analyzing pressure on underwater pipelines. While most similar projects had focused on elastic design, I was able to draw conclusions about the optimal diameter with plastic design.

PROFESSIONAL EXPERIENCE

Tekirdag Namik Kemal University **July 2018-Present**

- ✓ Instructor, Researcher

Teknik-El Company, Torbali, Turkey
Civil Engineer **August - December 2007**

- ✓ Design of steel construction forms for bridge, tunnels and hydraulic power plant

City of Karsiyaka, Izmir,Turkey
Summer Intern **June - August, 2006**

- ✓ Handled cost of material estimation

- ✓ Report and document tracking
- ✓ On-site project visits
- ✓ Invoice/agreement verification and building permit applications

Alarko Group of Companies, Adana, Turkey **June - August, 2005**
Summer Intern

- ✓ On-site project visits
- ✓ Participate in tunnel design

TEACHING EXPERIENCE

University of Wisconsin, Platteville
Design of Steel Structures, Statics & Structural Analysis

Teaching at undergrad level (Spring 2023)

Istanbul Medipol University
Design of Steel Structures

Teaching steel design class at undergrad level (Spring 2021)

Istanbul Kultur University
Design of Steel Structures

Teaching steel design class to 75 students at undergrad level (Spring 2021)

Tekirdag Namik Kemal University, Assistant Prof.
Corlu, Turkey
Design of Steel Structures 1 & 2

Teaching steel design class to over 100 students at undergrad level (Fall 2018-current)

Tekirdag Namik Kemal University, Assistant Prof.
Corlu, Turkey
Introduction to Earthquake Engineering

Teaching introduction level of earthquake engineering course to undergrad students. (Fall 2018)

UC San Diego, Center for Engaged Teaching
La Jolla, CA

Introduction to College Teaching

Take classes to learn how to teach in college level and how students learn.

UC San Diego, Instructor (Associate-in)
La Jolla, CA
Design of Steel Structures
Teaching steel design class to over 130 undergrad students for two quarters (Winter 2016-Fall 2017)

UC San Diego, Teaching Assistant
La Jolla, CA
Advanced Steel Design, Design of Steel Structures, Structural Analysis I

Gave lectures in review sessions, graded student projects and, hold office hours.

KEY SKILLS

Proficient or familiar with a vast array of programming languages, concepts and technologies, including:

- SPlus, MATLAB
- ABAQUS, OpenSees, SAP2000, Risa2D, Roumoko
- AutoCAD, SolidWorks, MathCAD
- Microsoft Office

AWARDS AND HONORS

- The Scientific and Technological Research Council of Turkey, Postdoctoral Research Award, 2019.
- Asian Dean's Rising Starts Women in Engineering Workshop Shortlisted Participant, 2018
- AISC Travel Award to attend the NASCC National Steel Conference, 2016
- AISC Travel Award to attend the NASCC National Steel Conference, 2015
- UC San Diego Dissertation Fellowship, 2016
- UIUC Women Engineers Association Scholarship, 2010
- Full Scholarship for MS and PhD abroad from Turkish Ministry of National Education (MEB), Republic of Turkey, 2008-2017
- Valedictorian in Civil Engineering Department, 2007
- Ranked Fourth among Engineering Departments at Celal Bayar University
- Dean's List, Celal Bayar University

KEY SKILLS

Proficient or familiar with a vast array of programming languages, concepts and technologies, including:

- SPlus, MATLAB
- ABAQUS, OpenSees, SAP2000, Risa2D, Roumoko
- AutoCAD, SolidWorks, MathCAD
- Microsoft Office

AFFILIATIONS

- Member, American Society of Civil Engineers
- Member, Structural Engineers Association of California (San Diego Branch)
- Member, American Institute of Steel Construction
- Member, Turkish Construction Professionals of Southern California
- Member, Turkish Structural Steel Association (TUCSA)
- Earthquake Engineering Research Institute (Vice President, EERI-UCSD Student Chapter, 2015-2017)
- Member, Mentor at TurkishWIN (Women Powerment)
- Member, UCSD Graduate Women in Science and Engineering (GradWISE)
- Executive Member, American Turkish Association South California
- Member, Turkish Chamber of Civil Engineers
- Mentor at Women in Civil Engineering Programs (Beyaz Baretli Kadinlar)

UNIVERSITY COMMITIES

- College Curriculum Committee – Fall 2018-Fall 2019
- University Quality Committee – College Representative- Fall 2018- Fall 2019
- College Future of Education Committee – Department Representative – Fall 2022 - current
- Erasmus Coordinator – Fall 2020 – current
- Structural Laboratories Committee – Fall 2019 – Fall 2021
- MUDEK Accreditation Committee – Fall 2021- Fall 2022

CERTIFICATES IN BUSINESS

University of California, San Diego
Business Administration Department — **September 2016-June 2017**
Leadership and Teamwork Certificate Program

University of California, San Diego
School of Business Administration — **September-December 2014**
Micro MBA Certificate Program

University of Pennsylvania, — **May 2007-May 2008**
Business Intensive Certificate Program

PUBLICATIONS

Refereed archival journal publications

- **Ozkula**, G., Harris, J., and Uang, C.-M. (2017). "Observations from Cyclic Tests on Deep, Wide-Flange Beam-

Columns." *Engineering Journal*, 1st Quarter, AISC, pp. 45-59.

- **Ozkula**, G., Garai, R., Lee, P. and Uang, C.-M. (2019). "Cyclic Behavior of Electroslag Welded Joints in Beam-to-Built-up Box Column Steel Moment Connections." *Journal of Structural Engineering*, ASCE, 145(12).
- **Ozkula**, G., Harris, J., and Uang, C.-M. (2017). "Cyclic Backbone Curves for Steel Wide-Flange Columns: A Numerical Study." *Ernst & Sohn Verlag für Architektur und technische Wissenschaften GmbH & Co.* KG, Berlin, pp. 3365-3374.
- Chansuk, P., **Ozkula**, G., Uang, C.-M. (2020). "Application of Timoshenko Beam-Column Theory in Data Correction for Steel Beam-Column Testing", *Journal of Structural Engineering*, ASCE, 146(3).
- **Ozkula**, G., Harris, J., and Uang, C.-M. (2021). "Development of Enhanced Seismic Compactness for Webs in Wide-Flange Steel Columns", *Journal of Structural Engineering*, ASCE.
- Akansel V.H., **Ozkula** G. (2021). "The 30 October 2020, Mw 6.6 Sisam (Samos) Earthquake: Interpretation of Strong Ground Motions and Post-Earthquake Condition of Nearby Structures", European Journal of Engineering and Applied Sciences, 4(2), 66-89.
- Chou, C.C., Lai, Y.C., Xiong, H.C., Lin, T.H., Uang, C.M., Mosqueda, G., **Ozkula**, G., El-Tawil, S., McCormick, J. P. (2022) *"Effect of Boundary Condition on the Cyclic Response of I-shaped Steel Columns: Two-Story Subassemblage versus Isolated Column Tests*" Earthquake Engineering and Structural Dynamics

Conference Proceedings

- Sarkisian, M., Lee, P., Garai, R., **Ozkula**, G., and Uang, C.-M. (2013). "Effect of Built-up Box Column Electroslag Welding on Cyclic Performance of Welded Steel Moment Connections." *Proceedings*, Structural Engineers Association Annual Convention, San Diego, CA.
- Lee, P., Garai, R., **Ozkula**, G., Uang, C.-M., and Sarkishian, M., (2014). "Issues on Using Welded Built-up Box-Columns in Steel Special Moment Frames." *Proceedings*, 10th US National Conference on Earthquake Engineering Frontiers of Earthquake Engineering, Anchor, Alaska.
- Uang C.M., **Ozkula** G., Harris J.L., (2015) "Cyclic Performance of Deep Wide-Flange Steel Columns." *Proceedings*, ICASS, Lisbon, Portugal.
- Uang C.M., **Ozkula** G., Harris J.L., (2015) "Observations from Cyclic Tests on Deep, Slender Wide-Flange Structural Steel Beam-Column Members." *Proceedings*, Annual Stability Conference, Structural Stability Research Council, Nashville, TN. (**presenter: G. Ozkula**)
- **Ozkula** G., Harris J.L., and Uang C.-M., (2017) "Classifying Cyclic Buckling Modes of Steel Wide-Flange Columns under Cyclic Loading." *Proceedings, Structures Congress*, ASCE, Denver, CO.
- **Ozkula** G., Harris J.L., and Uang C.-M., (2017) "Cyclic Backbone Curves for Steel Wide-Flange Columns: A Numerical Study." *Proceedings*, EuroSteel Conference, Copenhagen, Denmark.
- **Ozkula** G., Harris J.L., and Uang C.-M., (2018) "Buckling-Induced Shortening of Deep W-shape Columns in Seismic Steel Frames." *Proceedings*, 11th U.S. National Conference on Earthquake Engineering, LA, USA.
- Uang C.M., **Ozkula** G., and Chansuk P., (2019) "Research on Seismic Design of Deep Wide-Flange Steel Columns in the U.S.", *Proceedings*, 12th Pacific Structural Steel Conference Tokyo, Japan.
- Sepulveda, C., Mosqueda, G., Uang, C.M, **Ozkula**, G., Wang, K.J, Chou, C.C., Huang, P.C, Huang, C.W., Mao, C., and Becker, T. (2022) "Hybrid Simulation of Moment Frames with Deep Columns Experiencing Axial Shortening", 8th Assia Conference on Earthquake Engineering, Taipei, Taiwan.

Technical Reports

- **Ozkula**, G., Kim, D.-W., Uang, C.-M. (2012). "Swaged Bulkhead Analysis Verification: Phase I Study on Full-Scale Testing of Swaged and Bulb Stiffened Bulkheads." *Report No. SSRP-12/02*, University of California, San Diego, La Jolla, CA.
- **Ozkula**, G., Uang, C.-M. (2013). "Swaged Bulkhead Analysis Verification: Phase II Study on Full-Scale Testing of Swaged and Bulb Stiffened Bulkheads." *Report No. SSRP-13/15*, University of California, San Diego, La Jolla, CA.
- **Ozkula**, G., Uang, C.-M. (2013). "Cyclic Testing of Steel RBS Moment Connections with Built-up Box Column for the San Diego Central Court House." *Report No. TR-13/01*, University of California, San Diego, La Jolla, CA.
- **Ozkula**, G., Mashayekh, A., and Uang, C.-M. (2014). "Swaged Bulkhead Analysis Verification: Phase III Study on Full-Scale Testing of Swaged and Bulb Stiffened Bulkheads." *Report No. SSRP-14/02*, University of California, San Diego, La Jolla, CA.
- **Ozkula**, G., Uang, C.-M. (2015). "ATC-106: Seismic Behavior and Design of Deep, Slender Wide-Flange Structural Steel Beam-Column Members." *Report No. SSRP-15/06*, University of California, San Diego, La Jolla, CA.
- **Ozkula**, G., Uang, C.-M. (2016). "Subassemblage Testing of CoreBrace Buckling-Restrained Braces (NZ Series)." *Report No. TR-16/03*, University of California, San Diego, La Jolla, CA.

- **Ozkula**, G., Chansuk, P., Uang, C.-M. (2017). "ATC-106: Seismic Behavior and Design of Deep, Slender Wide-Flange Structural Steel Beam-Column Members Phase II" *Report No. SSRP-17/06*, University of California, San Diego, La Jolla, CA.

Posters

- Cyclic Behavior of Deep Steel Columns." *Asians Dean's Forum the Rising Stars Women in Engineering Workshop*, HKUST, Hong Kong, October 2018.
- "Cyclic Behavior of Deep Steel Wide-Flange Columns for Moment Frame Applications." *Research Expo, Jacobs School of Engineering*, University of California, San Diego, CA, April 2015.
- "High Strength Steel for Seismic Resistance of Beam-to-Column Connections: Novel Metal Investigation." *7th Annual EKS Retreat,*. February 2011.
- "Fragility Analysis of Steel Frames Using Computational Intelligence." *UIUC 6th Annual EKS Retreat,* University of Illinois at Urbana Champaign, February 2010.

PROJECTS

Tübitak 2219 Post-doctoral Research Scholarship in Japan

MBA COURSES

Istanbul University, *Executive MBA*
Organizational Behavior and Leadership

"Organizational Behavior and Leadership" is defined as the "approach" an individual person (often a leader) takes to lead members toward organizational goals that are aligned with corporate strategy. The purpose of this course is to help students develop the leadership skills they need to be more effective in the practical business world.

Istanbul University, *Executive MBA*
Quantitative Decision Making

Quantitative methods and spreadsheet skills to support management practice and decision making. Topics include statistical hypothesis testing, confidence intervals, regression analysis, optimization modeling, decision analysis and risk analysis. Therefore, this course develops quantitative methods and spreadsheet skills to support management practice and decision making including: hypothesis testing, confidence intervals, regression analysis, decision analysis, optimization and risk analysis. The course goals are: 1) Demonstrate the wide range of situations in which quantitative analysis improves decision making and creates competitive advantages; 2) Develop students' analytical thinking skills. 3) Develop mastery of analysis using spreadsheet models, and effective communication of results.

Istanbul University, *Executive MBA*
Business Research

Business research is a process of acquiring detailed information of all the areas of business and using such information in maximizing the sales and profit of the business. Such a study helps companies determine which product/service is most profitable or in demand. In simple words, it can be stated as the acquisition of information or knowledge for professional or commercial purpose to determine opportunities and goals for a business.

Istanbul University, *Executive MBA*
Strategic Management

Strategic Management is an integrative capstone course that seeks to provide a comprehensive look at organizations. Although it will draw upon many of the business courses that you have been exposed to, it does go beyond merely tying together the various functional courses you have had. Using the fundamentals in various areas such as accounting, marketing, finance and management, operations, and management information systems, several contemporary theories and practices of organizations will be explored. The course is structured to foster analytical, knowledge, reflective and verbal skills, and to expose you to the intricacies of organizational decision-making within the global context, and within an era of sustainability and corporate responsibility. There will be an emphasis on the theories behind the nature and function of organizations as a whole.

Istanbul University, *Executive MBA*
Simulations

The Business Simulation course is for those who want to apply problem solving techniques to multi-faceted business strategy situations that go deeper/wider than scenarios experienced in the "Strategy" course. Includes more sophisticated business analysis, marketing and strategy concepts with goal of completing a market-oriented strategic business plan in a PC-based team

simulation over last 5 weeks of the course. Case studies used as the basis for exploration and discussion of strategic issues. By the end of the course, students will be able to put together a strategic business plan and present it to the class (team).