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# Prof. Dr. Güven Kıymaz

Having graduated from Istanbul Technical University with a BSc degree in Civil Engineering, Dr. Kıymaz started his graduate education at Imperial College of Science, Technology and Medicine in London to obtain both his MSc and PhD degrees on Structural Engineering (financially supported by TEV-Türk Eğitim Vakfı / Turkish Education Foundation and British Steel plc.). His specific field of interest from the viewpoint of both education and research is steel structures. Through research collaborations made on both national and international levels he was involved in various research projects that led to the development of tangible outputs.



Having finished his PhD research study at Imperial College, London he worked for Alarko contracting company where he was responsible for the coordination of manufacturing, assembly and erection of nearly 10000 tons of structural steelwork as part of the second international airport terminal building in Istanbul. This experience has been very significant for his future academic life where, particularly in engineering research and teaching, it is vital to be able to relate one's academic activities with the real problems of the industry.

After the Alarko experience, his academic journey as faculty member at Civil Engineering Departments of various universities in Turkey started as an Assistant Professor of Structural Engineering in 2002 leading to Professor of Structural Engineering in 2016. Based on his educational and professional profile, he was responsible for delivering courses on Engineering Mechanics, Strength of Materials, Structural Analysis and Steel Structures courses at undergraduate level and at Graduate level he offered courses such as Theory of Elastic Stability, Earthquake Resistant Design of Structures, Advanced Steel Structures and Behavior and Design of Steel-Concrete Composite Structures. Over these years, he has developed an extensive amount of teaching experience in the field of structural engineering. On the other hand, research activities that he was involved in included the general titles of steel bolted and welded connections, thin walled cold formed steel members and systems, structural earthquake engineering, performance based earthquake engineering, structural stainless steel and heavy duty steel storage rack systems.

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## EDUCATIONAL BACKGROUND

- 1996-2000     *PhD in Structural Engineering @* Engineering Structures Section, Department of Civil Engineering, **Imperial College of Science, Technology and Medicine**, LONDON, UK, Thesis Title: Stability Criteria for Thin-Walled Welded Box Columns of High Performance Steel in Axial Compression, Thesis Supervisor: Prof. Dr. Marios K. Chryssanthopoulos
- 1995-1996     *MSc in Structural Steel Design @* Department of Civil Engineering, Engineering Structures Section, **Imperial College of Science, Technology and Medicine**, LONDON, UK
- 1995-1996     *DIC in Structural Steel Design*, Department of Civil Engineering, Engineering Structures Section, **Imperial College of Science, Technology and Medicine**, LONDON, UK
- 1991-1995     *BSc in Civil Engineering @* Department of Civil Engineering, Istanbul Technical University, ISTANBUL, Turkey

## COURSES OFFERED

### *Civil Engineering Department*

- ✓ Engineering Mechanics (undergraduate - compulsory)
- ✓ Strength of Materials (undergraduate - compulsory)
- ✓ Structural Analysis I and II (undergraduate - compulsory)
- ✓ Structural Steel Design (undergraduate - compulsory)
- ✓ Steel High Rise Building Design (undergraduate - elective)
- ✓ Seismic Resistant Design of Structures (undergraduate - elective)
- ✓ Structural Design of Wooden Structures (undergraduate - elective)
- ✓ Advanced Structural Engineering (post-graduate level)
- ✓ Thin Walled Steel Structures (post-graduate level)
- ✓ Theory of Elastic Stability (post-graduate level)
- ✓ Earthquake Resistant Design of Structures (post-graduate level)
- ✓ Advanced Steel Structures (post-graduate level)
- ✓ Behavior and Design of Steel-Concrete Composite Structures (post-graduate level)

### *Architecture Department*

- ✓ Principles of Structural System Design (undergraduate - compulsory)
  - ✓ Lightweight Structures (undergraduate - elective)
  - ✓ Architecturally Exposed Design of Steel Structures (undergraduate - elective)
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## MERITS IN TEACHING and PEDAGOGICAL COMPETENCE

Dr. Kıymaz has been actively teaching at university level since 2001. As listed above he has offered courses in Structural Engineering discipline including the core courses of Engineering Mechanics, Strength of Materials and Structural Analysis as well as a suite of design courses on structural steel, thin-walled steel, steel concrete composite and structural wood. At Masters and doctoral degree levels, he delivered courses on seismic design, structural stability and other advanced topics of interest. Courses offered for the architecture department included the structural system design principles, lightweight structures and architecturally exposed design of structural steel. Over the years past he has developed a very sound experience in communicating with students of this level. His interaction with his students has not been limited to classical lecturing but also included advising them in student competitions as well as one-to-one student tutoring and advising.

What motivates him the most in undergraduate teaching is to see his students do what they really like to do and feel happy. Therefore his major concern has always been to try to make his students really like what he is teaching them. In line with this fact he has designed his courses such that the students went through an effective as well as an enjoyable learning process. The following snapshots present some examples for how this was realized through various in class and field activities as well as the engineering competitions that he and his students participated both at national and international level.



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## STUDENT COMPETITIONS

Supervised teams of undergraduate students of Civil Engineering and Architecture to compete in the following national and international undergraduate student competitions.

### *Prosteel / Student Steel Design Competition*

This competition aims to provide a platform for students of civil engineering and architecture to compete in groups with the goal of producing designs that would utilize structural steel within a selected architectural program in a best possible way. The designs are expected to result in **economic** and **aesthetically pleasing** structures with **ecological, social** and **cultural** significance. The designs adopted by my teams were mostly composed of structural systems that resulted in **lightweight structures** utilizing typically tension members, curved surfaces and spatial systems including either single or doubly curved space systems with pure membrane stresses. Prosteel competitions have provided my students with great opportunity to develop a sound understanding of the principles of utilizing structural steel effectively and efficiently in a given architectural program. They also developed professional communication skills owing to the high level of interaction of the future architects with future structural engineers.

### *Steel Bridge Competition*

Supervised teams of undergraduate students of Civil Engineering to compete in the International Steel Bridge Competitions held annually at Bosphorus University in Istanbul. In this competition students are expected to design, manufacture and assemble on site a **cost-effective** steel bridge with high **aesthetic** features. Cost-effectiveness is provided by designing a **lightweight** bridge with high **strength** and **stiffness** characteristics. **Constructability** was another important feature that needed attention as the time needed to assemble the bridges on site was directly translated into better cost-effectiveness. Within around 7 years of participation to this competition teams that I supervised won the **championship** for 3 times.

### *Seismic Design Competition*

Supervised my students and prepared them for the Seismic Design Competition (SDC) organized annually by the **American Earthquake Engineering Research Institute** (EERI). This is a student competition where teams of Civil Engineering students are expected to design and build a seismically resistant and cost-effective building model using balsa wood material. In 2016 more than 30 teams from all around the world competed in SDC including the top ranking US universities. In this competition held in San Francisco in April 2016 our team ranked 5<sup>th</sup> in overall evaluation and won the **first prize** in the Earthquake Architecture category. <http://www.hurriyet.com.tr/dunya/8-siddetinde-basari-40098228>

### *DASK Depreme Karşı Dayanıklı Bina Tasarım Yarışması*

With a personal invitation from Kandilli Observatory Director Prof. Dr. Mustafa Erdik, acted as **Technical Committee chairman** within a team of professors from various universities from around Turkey. Sponsored by DASK, successfully implemented the famous Seismic Design Competition in Turkey.

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## BSc THESIS SUPERVISED

Supervised more than 100 undergraduate final year capstone projects. The project works mostly included the architectural and structural design of structural steel and steel-concrete composite buildings and bridges. Urged Civil Engineering students to establish teams with final year undergraduate Architectural students who were willing to have experience in steel design from an Architectural perspective.

## MSc and PhD THESIS SUPERVISED

Bassel El Kadi “**Behavior and design of perforated steel storage rack columns under axial compression**” Graduate School of Science and Technology, Structural Engineering Program, MSc Thesis, May 2014

Abba Massoud Alfanda “**Seismic Design and Behavior of Steel Storage Rack Frames**” Graduate School of Science and Technology, Structural Engineering Program, MSc Thesis, June 2014

Atakan Mangır “**Strength and Stability of Thin Walled Steel Columns in Storage Rack Structures**” Graduate School of Science and Technology, Structural Engineering Program, MSc Thesis, June 2014

Genç, F. “**Behavior and design of cold formed thin walled C section flexural members**” Graduate School of Science and Technology, Structural Engineering Program, MSc Thesis, June 2008

Seçkin, E. “**Effect of plate slenderness on the behavior of steel plate shear wall systems**” Graduate School of Science and Technology, Structural Engineering Program, MSc Thesis, June 2004

Seçkin, E. “**Behavior and design of gusset plate welded end connections of stainless steel hollow section members in tension**” Graduate School of Science and Technology, Structural Engineering Program, PhD Thesis, May 2014

Bassel El Kadi “**Seismic behavior and strength upgrading of steel storage racking frames**” Graduate School of Science and Technology, Structural Engineering Program, PhD study, ongoing

## INDUSTRY OUTREACH

Maintained strong links with civil engineering industry in Turkey through research and consultancy. Took on consultancy work on issues related to more effective design of metal structures (steel, aluminum and stainless steel) as well as seismic assessment and retrofit of existing steel and reinforced concrete structures. Coordinated and successfully completed a significant number of industry related projects.

## SELECTED PUBLICATIONS

Kıymaz, G., Cosgun. C., El Kadi, B., Mangır, A. “**Strength upgrading of steel storage rack frames in the down-aisle direction**” Steel and Composite Structures, Vol. 23, No. 2 (2017) 143-152

El Kadi, B., Kıymaz, G. “**Behavior and design of perforated steel storage rack columns under axial compression**” Steel and Composite Structures, Vol. 18, No. 5, May. 2015, pp. 1259-1277

Kıymaz, G., Seckin, E. “**Behavior and design of stainless steel tubular member welded end connections**”, Steel and Composite Structures, Vol. 17 No.3, Sep. 2014, pp.253-269

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- Kıymaz, G., Coskun. E., Cosgun, C, Seckin, E., "**Transverse load carrying capacity of sinusoidally corrugated steel web beams with web openings**", Steel and Composite Structures, Vol. 10, No. 1, Jan. 2010, pp. 69-85
- Kıymaz, G., "**Investigations on the bearing strength of stainless steel bolted plates under in-plane tension**", Steel and Composite Structures, Vol. 9, No. 2, Jan. 2009, pp. 173-189
- Kıymaz, G., Coskun. E., Cosgun, C. , "**Behavior And Design Of Seam-Welded Stainless Steel Circular Hollow Section Flexural Members**", Journal of Structural Engineering, ASCE, Vol. 33, No. 12, Dec. 2007, pp. 1792-1800
- Kıymaz, G, "**Strength and stability criteria for thin-walled stainless steel circular hollow section members under bending**", Thin Walled Structures, Vol. 43/10, Oct. 2005, pp. 1534-1549
- Kıymaz, G, "**FE based mode interaction analysis of thin-walled steel box columns under axial compression**", Thin Walled Structures, Vol. 43/7, Jan. 2005, pp. 1051-1070
- El Kadi, B., Kıymaz, G., Mangır, A. "**Experimental Investigation on the Behavior of Perforated Steel Storage Rack Columns Under Axial Compression**" Nordic Steel Construction Conference 2015 Tampere, Finland 23-25 September 2015
- Kıymaz, G., Cosgun. C., El Kadı, B., Mangır, A. and Çalık, E. "**Strength upgrading of existing steel storage rack beam-to-column connections**" SMAR 2015, Third Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures, September 2015, Antalya, Turkey
- Peköz, T. Casafont, M., Roure, F., Somalo, M.R., Kıymaz, G., Pastor, M.M., Bonada, J. "**Current Research On Cold-Formed Steel Industrial Racks**" 5th Steel Structures Symposium, 13-15 Nov. 2013, İstanbul
- Peköz, Teoman., Kıymaz, G., Casafont, M., Pastor, M.M., Bonada, J., "**Design of perforated industrial storage rack columns for distortional buckling**", 21st International Specialty Conference on Cold-Formed Steel Structures - Recent Research and Dev., Jan. 2012, pp. pp. 437-454, St. Louis, Missouri
- Kıymaz, G., Seckin, E. "**Strength and design of slotted and gusset plate welded tubular member connections in stainless steel**" Stainless Steel in Structures - Fourth International Experts Seminar Ascot, UK. 6-7 December 2012
- Kıymaz, G., Seckin, E. , "**Investigation of the behavior of gusset plate welded slotted stainless steel tubular members under axial tension** ", Tubular Structures XIV - Proceedings of the 14th International Symposium on Tubular Structures, ISTS, Jan. 2012, pp. pp. 369-375
- Kıymaz, G., Peköz, Teoman. "**Recent research activities on column behaviour with special emphasis on distortional buckling**" European Racking Federation (ERF) / ECCS WG7.5 Meeting and Workshop, Barcelona, 20-22 January 2010
- Kıymaz, G., Seckin, E., "**Strength of slotted stainless steel tubular member tension connections**", International Symposium on Steel Structures: Culture and Sustainability , Istanbul / Turkey, Sep. 2010, pp. 371-381
- Kıymaz, G., Coskun, E., Cosgun, C., Seckin, E., "**Transverse load carrying capacity of sinusoidally corrugated steel webs with web openings**", International Symposium on Steel Structures: Culture and Sustainability , Istanbul / Turkey, Sep. 2010, pp. 593-603
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- E.Coskun, G. Kıymaz, E. Seckin, "**Sustainable and earthquake resistant structural systems**", Guimares / Portugal, Jul. 2010, pp. 1467-1472
- Kıymaz, G., "**Bearing strength of bolted stainless steel plates in tension**", 11th Nordic Steel Construction Conference – NSCC2009, Malmö / Sweden, Sep. 2009, pp. 238-246
- Dikmen S. Umit, Turk A. Murat, Kıymaz Guven , "**Effect of depth of ground water on the seismic response of frame type buildings on sand deposits. Part I: Soil Response**", NATO Advanced Research Workshop on Coupled Site and Soil-Structure Interaction Effects with Applica., Borovets / Bulgaria , Sep. 2008, pp. 273-280
- Kıymaz, G., "**Numerical investigation of coupled instability in axially loaded steel box columns**", Fifth International Conference on Coupled Instabilities in Metal Structures, CIMS2008, Sydney / Australia, Jun. 2008, pp. 595-603
- Kıymaz, G., Coskun. E., Cosgun, C., "**Examination of Cross-Section Stability of Stainless Steel Tubular Sections by Finite Element Analysis**", Fifth International Conference on Advances in Steel Structures, Singapore, Dec. 2007, pp. 882-889
- Kıymaz, G., Coşkun, Coşgun, C., E., Seçkin, E., "**Strength of Sinusoidally Corrugated Web Beams with Web Openings**", 6th International Conference on Steel and Aluminium Structures ICSAS'07, Oxford / UK, Jul. 2007, pp. 872-880
- Kıymaz, G., Coşkun, E., Seçkin, E., "**Effect of plate slenderness on the seismic performance of steel plate shear wall systems**", 7th International Congress on Advances in Civil Engineering, İstanbul / Turkey, Oct. 2006,
- Kıymaz, G., Coşkun, E., "**Critical assessment of the behavior and design of steel box columns to Eurocode 3**", 6th International Congress on Advances in Civil Engineering, İstanbul, Turkey, Oct. 2004, pp. 520-530
- Karatas, H., Mastanzade, N., Kıymaz, G., "**Model Experiments of a Tension Leg Platform**", International Conference on Offshore Mechanics and Arctic Engineering, Cancun / Mexico, Dec. 2003, pp. 417-425
- Kıymaz, G., Chryssanthopoulos, M.K., "**Ultimate Strength of Imperfect High Performance Steel Plate Panels under Uni-axial Compression**", Fifth International Congress on Advances in Civil Engineering, İstanbul / Turkey, Sep. 2002, pp. 487-497
- Coşkun, E., Kıymaz, G., "**Interaction between Architecture and Engineering**", Structure, No. 308, Jan. 2011
- Kıymaz, G., Genç, F., Seckin, E., "**Strength of thin walled steel C section members with web perforations**", 3<sup>rd</sup> Steel Structures Symposium, Gaziantep / Turkey, Oct. 2009, pp. 301-310
- Kıymaz, G., "**Numerical Simulation of Seam-Welded Stainless Steel Tubular Members under Bending**", ABAQUS Users' Meeting, İstanbul, Nov. 2007, pp. 109-133
- Kıymaz, G., Coşkun. E., "**Design and behavior of corrugated web steel fabricated beams**" Steel Structures, Turkish Constructional Steelwork Association, Sep. 2006
- Kıymaz, G., "**A Finite Element Validation Study For The Strength Prediction Of Steel Box Columns With Initial Geometric Imperfections And Welding Residual Stresses**", ABAQUS Users' Meeting, İstanbul/Turkey, Sep. 2005
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Kıymaz, G., Coşkun, E., "Fundamentals of design for stiffened steel plate members" TMH – Engineering News, No. 436, Feb. 2005

Kıymaz, G. "Stability and Strength Criteria for High Performance Steel Plates under Edge Compression" Journal of Istanbul Kültür University, 2003/3, pp.1-26

Kıymaz, G., "Fundamental approach for the design of structural steelwork connections" Construction Magazine, Dünya Publishing, Oct. 2001

Kıymaz, G., Chryssanthopoulos, M.K., "Bending Tests of Structural Stainless Steel Circular Hollow Sections", Department of Civil Engineering, Imperial College, London, CESLIC Report OR 12, Vol. 12, Jan. 1998

## **ADMINISTRATIVE POSITIONS OF RESPONSIBILITY**

Department Chair, Civil Engineering Department, Antalya Bilim University

Member, Engineering Faculty Senate, Antalya Bilim University

University ECTS Coordinator, Istanbul Kültür University

Erasmus Coordinator, Civil Engineering Department, Istanbul Kültür University

## **MEMBERSHIPS**

EERI / Earthquake Engineering Research Institute, USA

SCI / Steel Construction Institute, UK

FEM-ERF / European Racking Federation, Belgium

ASCE/SEI-Committee on Cold Formed Structures The Steel Construction Institute / UK

Turkish Chamber of Civil Engineers, Turkey

TUCSA / Turkish Constructional Steelwork Association, Turkey

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