

CURRICULUM VITAE

DONGKEUN LEE, Ph.D.

Assistant Professor

Department of Civil Engineering
Antalya Bilim University, Turkey

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RESEARCH INTERESTS:

- Rehabilitation of structures using FRP composites
- Sustainable infrastructure
- Resilient structures under extreme event
- Structural health monitoring
- Advanced materials for high-performance concrete structures
- Prestressed concrete structures
- Large-scale test
- Numerical analysis

TEACHING INTERESTS:

- Statics, Structural Analysis, Reinforced Concrete Design, Design of FRP Composite Structures, Steel Structures, Mechanics of Materials, Pre-stressed Concrete Design, Bridge Design, Dynamics, Construction Materials, Engineering Drawing, Senior Projects, etc
- Any courses I need to teach in the Department

EDUCATIONAL BACKGROUND:

University of California-Davis 9/2012

Ph.D., Structural Engineering and Mechanics

Dissertation Advisor: Dr. Lijuan Cheng

Dissertation Title: Flexural Rehabilitation of Concrete Structures Using NSM FRP Composites

Hanyang University, South Korea 2/2006

M.S., Structural Engineering

Thesis Advisor: Dr. Li-Hyoung Lee

Thesis Title: Experimental Study on Comparison of Structural Behavior between Reinforced Concrete and Post-Tensioned Flat Plates

Cheongju University, South Korea 2/2004

B.S., Architectural Engineering, **Admission with Four-Year Full**

Scholarship (given to only 5 exceptional students out of 3000 new students and Graduation with Summa Cum Laude (1st rank in the department)

RESEARCH EXPERIENCE:

Antalya Bilim University, Turkey

9/2015-present

Department of Civil Engineering

Assistant Professor

Sustainable Concrete Composite Highway with Discarded Tire Chips (PI, proposal is about to be submitted to TÜBİTAK 1001)

- Numerical modeling of concrete composite highway using LS-DYNA
- Design, fabrication, and test of concrete composite cylinders and beams to develop optimal composite pavement

Effect of Carbon Nanotube-Modified Epoxy on Concrete Bridge Strengthened with NSM FRP Composites under Fatigue Loading (PI, proposal is being written for TÜBİTAK 1001)

- Design, fabrication, and fatigue test of specimens through condition monitoring
- Life-cycle cost analysis

Development of Effective Connection Details for Small-Size Steel Structures

- Development of optimum column-base plate and beam-column connection details for small-size steel structures

Development of Comprehensive Models to Predict Concrete Pavement Temperature Gradients

- Development of comprehensive temperature gradient modelling for concrete pavement using ordinary regression and geographically weighted regression

Nonlinear Dynamic Behavior of Long-Span FRP-Cable-Stayed Bridges

- Development of 3-D finite element model to investigate nonlinear dynamic behavior of long-span FRP-cable-stayed bridges

Korea Institute of Civil Engineering and Building Technology

2/2016-10/2017

Building and Urban Research Center

Part-Time Research Associate

Development of Efficient Concrete Building System against Vibration

- Analysis and application of new rubber pad system to reduce vibration caused by trains

Southern University-Baton Rouge, USA

8/2013-5/2015

Department of Civil and Environmental Engineering

PI: Dr. Hak-Chul Shin

Post-doctoral Research Associate

Development of Fortified CMU Walls Using FRP Composites under

Explosive Loading (supported by the U.S. Department of Defense)

- Numerical modeling of concrete masonry unit walls using LS-DYNA
- Design, fabrication, and test of masonry walls strengthened with FRP composite materials to study structural behavior
- Providing strategies for sustainable fortified CMU walls against the intrusion of extreme loading

Development of Rapid PCC Highway Repair Materials and Construction Techniques (funded by the U.S. Federal Highway Administration)

- Design, fabrication, and test of concrete specimens to develop optimal sustainable concrete highway using re-cycled aggregate

University of California-Davis

Department of Civil and Environmental Engineering

PI: Dr. Lijuan Cheng

Post-doctoral Researcher

Impact Resistance of Brittle Structural Components Using Advanced Polymer Composites (funded by Saint-Gobain Corporation)

- Design, fabrication, test, and analysis of grinding wheels strengthened with FRP sheet to investigate behavior of the wheels subjected to impact force using a drop weight pendulum system
- High speed camera analysis for high strain rate loading

9/2012-6/2013

University of California-Davis

Department of Civil and Environmental Engineering

Advisor: Dr. Lijuan Cheng

Doctoral Student Researcher

Flexural Rehabilitation of Concrete Structures Using NSM FRP Composites (supported by the California Department Transportation)

- Structural level (Flexural strengthening)

- Design, fabrication, test, and analysis of 13 full-scale bridge slab overhangs strengthened with NSM FRP bars to investigate effect of various FRP bars and pre-stressing
- Development of an innovative pre-stressing unit for NSM FRP strips
- Efficient data acquisition using LabVIEW
- Numerical modeling using ABAQUS
- Design details of NSM FRP technique through nonlinear regression analysis using SPSS

- Sub-component level (Bond characteristics)

- Design, fabrication, test, and analysis of 109 concrete block specimens to assess efficiency of different adhesives, NSM FRP bars, and groove sizes

9/2006-9/2012

- Study on theoretical bond stress-slip models
- Material level (FRP coupon testing)
- Tensile properties of various types of FRP bars
 - Development of an efficient FRP gripping method
- Seismic Design Guidelines of Retaining Walls with/without Sound Wall*
- Fabrication and test of full-scale retaining walls using a large shake table at the University of California, San Diego
- Mechanism-Based FRP Composite Strengthened Reinforced Concrete Members*
- Fabrication and test of concrete with bi-stable FRP sheets
- Impact Behavior of Unreinforced Concrete Masonry Walls Strengthened with FRP Composites*
- Fabrication, test, and analysis of masonry walls strengthened with FRP sheets

Hanyang University

3/2004-2/2006

Department of Architectural Engineering

Advisor: Dr. Li-Hyoung Lee

Master Student Researcher

Hysteretic Behavior of Reinforced Concrete and Post-Tensioned Flat Plates Subject to Cyclic Loading

- Design, fabrication, test, and analysis of 12 large-scale reinforced concrete and post-tensioned flat plates subjected to cyclic loading
- Field test using three-story building

TEACHING EXPERIENCE:

Antalya Bilim University (*all courses are taught in English*)

9/2015-Present

Assistant Professor

Structural Analysis II

**Spring 2018,
2017, and 2016**

- Lectures for concepts and knowledge need for analyzing various statically indeterminate structures
- Office hours for additional tutoring
- Grading of exams, reports, and homework assignment

Reinforced Concrete I

**Spring 2018,
2017, and 2016**

- Lectures for the analysis and design of reinforced concrete members such as beams and slabs as well as bond and lap splice
- Problem solving session and office hours for additional tutoring
- Grading of exams and homework assignments

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| Design of FRP Composite Structures | Spring 2018 and 2017 |
| <ul style="list-style-type: none"> • Lectures for the analysis and design of FRP composite structures • Computer and experimental lab sessions • Making and grading reports and exams • Problem solving session and office hours for additional tutoring | |
| Industrial Training I | Spring 2018 |
| <ul style="list-style-type: none"> • Guiding students for their internships in the field • Grading internship reports and presentations | |
| Statics | Fall 2017, 2016, and 2015 |
| <ul style="list-style-type: none"> • Lectures to convey fundamental knowledge of Statics • Office hours for additional tutoring • Making and grading of exams and homework assignment | |
| Reinforced Concrete II | Fall 2017 and 2016 |
| <ul style="list-style-type: none"> • Lectures for the analysis and design of reinforced concrete members such as walls, columns, footings, etc • Computer and experimental lab sessions • Making and grading of exams and homework assignments | |
| Structural Analysis I | Fall 2017, 2016, and 2015 |
| <ul style="list-style-type: none"> • Lectures for concepts and knowledge needed for analyzing various statically determinate structures • Office hours for additional tutoring • Making and grading of exams and homework assignment | |
| Engineering Drawing | Spring 2017 |
| <ul style="list-style-type: none"> • Lectures for hand drawing and AutoCAD drawing • Making and grading homework and exams • Computer lab sessions | |
| <u>Advisor/Mentor</u> | |
| Graduate Research Assistant (Oğuzhan Çetindemir, M.S.) | 9/2016-Present |
| <ul style="list-style-type: none"> • Advice on research | |
| First- and Second-year Students | 2/2016-Present |
| <ul style="list-style-type: none"> • Advice on general things including courses as an academic advisor | |
| Academic Advisor for <u>Senior Design Projects</u> | 2/2017-Present |
| <ul style="list-style-type: none"> • Advice on senior design project of students | |
| Spaghetti Bridge Design Team (Akbaraly Kambaraly UULU and Mustafa | 2/2017-5/2017 |

Abbas KANORWALA)

- Advice on students' competition

Seismic Design Team (Ahmad Siar Mahmood Shah, MELİH İŞERİ, and HÜSEYİN ÖZER) **10/2016-4/2017**

- Advice on students' competition

Steel Bridge Design Team (Bahar Neslişah KALE, Beril KILIÇ, Akbaraly Kambaraly UULU, Veysi ERDEMÇİ, and Mustafa Abbas KANORWALA) **9/2015-4/2016**

- Advice on students' competition

Southern University-Baton Rouge **8/2013-5/2015**
Adjunct Professor

Construction Materials Laboratory **Spring 2015 and 2014**

- Lectures with regard to various construction materials
- Laboratory sessions for measuring various properties of concrete
- Office hours for additional tutoring
- Making and grading of exams, reports, and homework assignments

Reinforced Concrete Design **Fall 2014 and 2013**

- Lectures for the analysis and design of reinforced concrete structures
- Office hours for additional tutoring
- Making and grading of exams and homework assignments

Advisor/Mentor

M.S. Student (Denita Walker) **8/2014-5/2015**

- Advice on M.S. research project

Academic Advisor for **Senior Design Projects** (Toi Bonnet, Kiera Dorsey, and Kylan Douglas) **8/2014-5/2015**

- Advice on senior design projects

Undergraduate Students (Marcos Da Silva, Toi Bonnet, Kiera Dorsey, and Joshua Duncan) **8/2014-5/2015**

- Advice on research projects

University of California-Davis **Winter 2010,**
Teaching Assistant **Fall 2010,**

Design of Fiber Reinforced Polymer Composite Structures (**graduate level**) **Winter 2008,**
and Fall 2008

- Lectures offered for FRP composite analysis
- Lab sessions held for fabrication, test and analysis of FRP

- Office hours and grading

Advisor/Mentor

M.S. Student (Jason Hui)

2010-2011

- Advice on M.S. research project
- Review of M.S. report

Undergraduate Students (Hyejin Lee, Humza Moonser, Ryan Ngo, Randall Gee, Norman Cheung, Brian Lee, Kevin Kuei, Debra Fong, William Yu, Rebecca Joseph, Ruwanka Purasinghe, Richard Weng, and David Szeto)

2006-2011

- Advice on various research projects

PRACTICAL EXPERIENCE:

Republic of Korea Air Force
Construction Soldier

3/1998-9/2000

- Served on design and construction of many concrete and steel structures on the 17th air force base

PUBLICATIONS:

Peer-Reviewed Journal Papers

*corresponding author

- Lim, W., **Lee, D.***, and You, Y. (2017). "Cyclic Loading Tests on Exposed Column-Base Plate Weak-Axis Connections of Small-size Steel Structures." *Engineering Structures*, Elsevier, Vol. 153, pp. 653-664. [SCI, **11th ranked** journal among all civil and structural engineering journals, source: SCImago journal ranking]
- **Lee, D.**, Cheng, L., and Deleuze, C. (2017). "Dynamic Behavior of FRP-Strengthened Grinding Wheels Subjected to Pendulum Impact." *Journal of Testing and Evaluation*, ASTM, Vol. 45, No. 4, pp. 1159-1170. [SCI]
- Lim, W., **Lee, D.***, and You, Y. (2017). "Exposed Column-Base Plate Strong-Axis Connections for Small-Size Steel Construction." *Journal of Constructional Steel Research*, Elsevier, Vol. 137, pp. 286-296. [SCI(E), **13th ranked** journal among all civil and structural engineering journals, source: SCImago journal ranking]
- **Lee, D.** and Shin, A. (2016). "Finite Element Study on the Impact Responses of Concrete Masonry Unit Walls Strengthened with Fiber-Reinforced Polymer Composite Materials." *Composite Structures*, Elsevier, Vol. 154, pp. 256-268. [SCI(E), **2nd ranked** journal among all civil and structural engineering journals, source: SCImago journal ranking, **This paper has been selected as a key scientific article by *Advances In Engineering*.]**
- Choi, Y. C., Choi, H. K., **Lee, D.***, and Choi, C. S. (2015). "Shear Strength of Unreinforced Masonry Wall Retrofitted with Fiber Reinforced Polymer and Hybrid Sheet." *International Journal of Polymer Science*, Hindawi, Vol. 2015, Article ID

863057, 13 pages. [SCI(E)]

- Ha, S. and **Lee, D.*** (2014). “Structural Behavior of Hollow Core Beams with GFRP Bars.” *Pacific Science Review*, Vol. 16, No. 3, pp. 12-18.
- Noh, S.-Y. and **Lee, D.*** (2014). “Assessment of Crack Width Estimation Models for RC Tension Members.” *Materials Research Innovations*, Taylor & Francis Online, Vol. 18, No. s2, pp. 816-823. [Web of Science and Scopus]
- **Lee, D.**, Cheng, L., and Hui, J. (2013). “Bond Characteristics of Various NSM FRP Reinforcements in Concrete.” *Journal of Composites for Construction*, ASCE, Vol. 17, No. 1, pp. 117-129. [SCI(E), **7th ranked** journal among all civil and structural engineering journals, source: SCImago journal ranking]
- **Lee, D.** and Cheng, L. (2013). “Bond of NSM Systems in Concrete Strengthening – Examining Design Issues of Strength, Groove Detailing and Bond-Dependent Coefficient.” *Construction and Building Materials*, Elsevier, Vol. 47, pp. 1512-1522. [SCI(E), **18th ranked** journal among all civil and structural engineering journals, source: SCImago journal ranking]
- **Lee, D.** and Cheng, L. (2011). “Assessing the Strengthening Effect of Various Near-Surface-Mounted FRP Reinforcements on Concrete Bridge Slab Overhangs.” *Journal of Composites for Construction*, ASCE, Vol. 15, No. 4, pp. 615-624. [SCI(E), **7th ranked** journal among all civil and structural engineering journals, source: SCImago journal ranking]
- **Lee, D.**, Ha, S., and Lee, M. S. (2005). “Experimental Study on Comparison of the Hysteretic Behavior of RC Flat Plate and PT Flat Plate Interior Joints.” *Journal of the Architectural Institute of Korea*, Vol. 21, No. 10, pp. 95-102. [KCI]
- **Lee, D.*** and Shin, A. “Strengthening Effect of Fiber-Reinforced Polymer Composites on Concrete Masonry Unit Walls Subjected to Impact Force.” *Journal of Composites for Construction*, ASCE, the manuscript is almost completed (to be submitted in February, 2018). [SCI(E)]
- **Lee, D.**, Choi, G., and You, Y. “Development of Vibration Control Technology for Artificial Ground Concrete Structures.” *Construction and Building Materials*, Elsevier, the manuscript is being written (to be submitted in March, 2018). [SCI(E)]
- Lim, W., **Lee, D.***, and You, Y. “Assessment of the Seismic Performance of Small-Size Steel Structures: Experimental and Numerical Models.” *Engineering Structures*, Elsevier, the manuscript is being written (to be submitted in March, 2018). [SCI]
- **Lee, D.**, Williams, D., and Shin, A. “Comprehensive Models to Predict Concrete Pavement Temperatures.” *Journal of Transportation Engineering*, ASCE, analysis is being conducted (to be submitted in April, 2018). [SCI(E)]
- **Lee, D.**, Kim, J., and Shin, A. “Modeling Temperature Gradients in Concrete Pavements through Geographically Weighted Regression Analysis.” *Journal of Transportation Engineering*, ASCE, GWR analysis is being carried out (to be submitted in April, 2018). [SCI(E)]

- Çetindemir O., Lee, D.* “Nonlinear Dynamic Behavior of Long-Span FRP-Cable-Stayed Bridges.” *Composite Structures*, Elsevier, FEA is being conducted (to be submitted in March, 2018). [SCI(E)]
- Çetindemir O., Lee, D.* “Benefit from FRP Cables over Steel Cables for Long-Span Cable-Stayed Bridges.” *Engineering Structures*, Elsevier, FEA is being conducted (to be submitted in April, 2018). [SCI]

Conference Papers

- Noh, S., Lee, S., and Lee, D. (2017). “On the Form-Finding Concept of Two-Shell Natural Draught Cooling Towers.” *Proceedings of the IASS Annual Symposium 2017 “Interfaces: architecture, engineering, science”*, Hamburg, Germany, 25-28 September 2017.
- Lee, D., Shin, H., and Cheng, L. (2014). “Design Issues of Strengthening Technique Using NSM FRP Rods.” *US-Korea Conference*, San Francisco, CA, 6-9 August 2014.
- Lee, D., Hui, J., and Cheng, L. (2012). “Bond Characteristics of NSM Reinforcement in Concrete due to Adhesive Type and Surface Configuration.” *The 6th International Conference on FRP Composites in Civil Engineering (CICE 2012)*, Rome, Italy, 13-15 June 2012.
- Lee, D., and Cheng, L. (2010). “Strengthening of Reinforced Concrete Structures using NSM FRP Reinforcement.” *The 5th North-West US-Korea Conference*, Portland, OR, 11-12 December 2010.
- Lee, D., and Cheng, L. (2009). “Flexural Strengthening of Reinforced Concrete Bridge Slab Overhangs using Near Surface Mounted Reinforcement.” *The 9th International Symposium on Fiber Reinforced Polymer Reinforcement for Concrete Structures (FRPRCS-9)*, Sydney, Australia, 13-15 July 2009.
- Lee, D., Ha, S. S., and Lee, L.-H. (2005). “Effect of Gravity Load on the Hysteretic Behavior of Post-tensioned Flat Plate Interior Joints.” *Proceedings of the Architectural Institute of Korea*, South Korea, October 2005.
- Cho, J., Lee, D., Ha, S. S., and Lee, L.-H. (2005). “Experimental Study on Comparison of the Hysteretic Behavior of RC Flat Plate and PT Flat Plate Interior Joints.” *Proceedings of the Architectural Institute of Korea*, South Korea, October 2005.
- Lee, D., Ha, S. S., Han, S. W., and Lee, L.-H. (2005). “Experimental Study on Comparison of Structural Behavior of PT Flat Plate and RC Flat Plate Interior Connections.” *Proceedings of the Korea Concrete Institute*, South Korea, May 2005.

Technical reports

- Lee, D., and Shin, H. (2015). “Development of Sustainable Fortified CMU Walls under Explosive Loading.” submitted to the U.S. Department of Defense, Department of Civil and Environmental Engineering, Southern University at Baton Rouge.
- Lee, D., and Cheng, L. (2013). “Impact Test Method Development to Evaluate the Impact Resistance of Grinding Wheels.” submitted to Saint-Gobain, Department of Civil and Environmental Engineering, University of California, Davis.

- **Lee, D.**, and Cheng, L. (2010). “Flexural Strengthening of Reinforced Concrete Bridge Slab Overhangs using Near Surface Mounted Reinforcement.” submitted to the California Department of Transportation (Caltrans), CA/UCD-SESM-10-03, Department of Civil and Environmental Engineering, University of California, Davis.
- Lee, L., Han, S., Ha, S, Kee. S., Cho. G., Park, Y., **Lee, D.**, Cho. J., Lee, B., Moon, J., Lee, S. (2005). “Study on Utilization of Post-tensioned Flat Plate Structure.” submitted to the Korea Institute of Construction and Transportation Technology Evaluation and Planning (KICTEP), 03ISRB01-01, Department of Architectural Engineering, Hanyang University, South Korea.

INVITED SEMINARS:

- **Lee, D.** (2012). “Flexural Rehabilitation of Concrete Structures Using NSM FRP Composites.” Hanyang University at Ansan, South Korea, September 25.
- **Lee, D.** (2012). “Rehabilitation of Reinforced Concrete Structures.” Hanyang University at Seoul, South Korea, September 17.
- **Lee, D.** (2012). “Flexural Strengthening of Concrete Structures.” Kyoungnam University, South Korea, September 14.
- **Lee, D.** (2012). “Strengthening of Reinforced Concrete Structures Using NSM FRP Composites.” Cheongju University, South Korea, September 11.

SCHOLARSHIPS, AWARDS, AND HONORS:

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| Excellent presentation award , the 5 th North-West US-Korea Conference, Portland, OR, Korean-American Scientists and Engineers Association | 2010 |
| Travel award , the 5 th North-West US-Korea Conference, Portland, OR, Korean-American Scientists and Engineers Association | 2010 |
| Scholarship (\$10,000) , University of California, Davis | 2006-2007 |
| Scholarship for professional training by Abaris (\$1,000) , Society for the Advancement of Materials and Process Engineering (SAMPE) | 2007 |
| Ambassadorial scholarship (\$26,000) , the International Rotary Foundation | 2006-2007 |
| Summa Cum Laude (ranked 1st) , Department of Architectural Engineering, Cheongju University, South Korea | 2004 |
| Special prize , Department of Architecture, Chungbuk Art Association, South Korea | 2001 |
| Four-year full scholarship (admission with full tuition and fees exemption as well as monthly stipend for <u>four years</u>) , Cheongju University, South Korea | 1996, 1997, 2002, and 2003 |

LANGUAGES:

English: fluent and Korean: native

COMPUTER SKILLS:

LS-DYNA, ABAQUS, SPSS, MATLAB, LabVIEW, and AutoCAD

SERVICE AND PROFESSIONAL ACTIVITIES:

- Chair**, Department Curriculum Development at Antalya Bilim University **2017**
- Service on developing department curriculum for both undergraduate and graduate courses
- Coordinator**, Erasmus Program at Antalya Bilim University **2017**
- Service on Erasmus program (exchange program)
- Committee**, Search Committee at Antalya Bilim University **2016-present**
- Service on searching new faculty members
- Consultant**, Korea Institute of Civil Engineering and Building Technology **2016**
- Consultation on research projects
- Chair**, Balsa Wood Bridge Design Competition at Antalya Bilim University **2015**
- Organization of the competition
- Member**, ABET Accreditation at Southern University, Baton Rouge **2015**
- Service on **ABET accreditation** for the department
- Member**, Knights of Columbus (International Service Club) **2014-2015**
- Serving people in need, the sick, and disabled
 - Performing social and public relief works
- Journal Reviewer**, *Construction and Building Materials*, Elsevier; *Journal of Reinforced Plastics and Composites*, SAGE; *Steel and Composite Structures*, Techno Press; *Materials Research Innovations*, Taylor and Francis; *Pacific Science Review*, Elsevier **2011-present**
- Review of submitted journals
- Consultant**, Kangnam University, South Korea **2013 and 2016**
- Consultation on a research project related FRP composites
- Member**, Davis Korean Service Group **2011-2012**
- Serving homeless people
- Committee**, KSEA National Math and Science Competition, Korean-American Scientists and Engineers Association **2011**
- Organization of the competition and grading the examination
- Vice President**, Korean Graduate Students Association, University of California-Davis **2010-2011**

- Organization of career fairs (e.g., Samsung and LG) and social events (e.g., the first meeting event with students at the University of California, Berkeley)

Judge, KSEA National Math Competition, Korean-American Scientists and Engineers Association **2009**

- Proctor and grading the examination

President, Korean Civil and Environmental Engineering Students Association, University of California-Davis **2008-2009**

- Organization of social events

Member, Youth Service Group **2000-2001**

- Serving people at a rehabilitation center
- Serving aged people

MEMBERSHIP:

Society for the Advancement of Materials and Process Engineering (SAMPE)

Architectural Institute of Korea (AIK)

Korea Concrete Institute (KCI)

Korean-American Scientists and Engineers Association (KSEA)