

# IOANNIS BALAFAS

Nationality: Hellenic (Greek)

Date of Birth: 1<sup>st</sup> April 1974

Marital status Married

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## EDUCATION

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- 2000-2003 *PhD in Structural Engineering* *University of Cambridge – UK*
- Structures Group, Engineering Department.
  - Project: *Fibre-Reinforced-Polymers Versus Steel in Concrete Bridges: Structural Design and Economic Viability*
- 1998-1999 *MSc in Structural Dynamics* *University of Sheffield – UK*
- Vibration Research Section, Dept of Civil and Structural Engineering.
  - Project: *Dynamic finite element modelling of walking excitation with elements of uncertainty.*
- 1992-1997 *Diploma in Civil Engineering* *University of Patras - Greece*  
5 year course. Major: Structural Engineering.

## EMPLOYMENT HISTORY

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- 01/07 – present *Visiting Lecturer – Instructor* *University of Cyprus*  
School of Engineering  
Department of Civil and Environmental Engineering  
Department of Architecture
- 11/05 – 11/06 *Military Service* *Greek Army*  
Infantry - Rank: Sergeant
- 11/03 – 11/05 *Design Engineer* *Tony Gee and Partners*
- Projects involved:
- Erection of Heathrow's Control Tower: Temporary works check.
  - Erection of Wembley's Stadium Roof (south part): Temporary works Design.
  - Erection of Stonecutter's bridge Hong Kong: Temporary works check.
  - Design of steel and concrete bridge strengthening using FRP plates throughout UK.
- 01/02 – 06/02 *Round Robin Bond tests* *Concrete - Structures Lab, University of Cambridge*  
International tests to study bond of FRP reinforcement with concrete: design and execution for Cambridge University. 33 pull-out and 34 split specimens tested.

## RESEARCH INTERESTS

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Reinforced and prestressed concrete design with steel and fibre reinforced polymers, corrosion of steel bars in concrete, bridge assessment, bridge repair costs, traffic delays, concrete under lateral constraints.

## TEACHING EXPERIENCE

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01/07 – present     *Visiting Lecturer - Instructor*     *University of Cyprus*  
 Courses developed and taught:

Department of Civil and Environmental Engineering

- Introduction in Civil Engineering – 1<sup>st</sup> year module
- Structural Mechanics - 1<sup>st</sup> year module
- Structural Analysis I – 1<sup>st</sup> year module
- Numerical Methods – 2<sup>nd</sup> year module
- Strength of Materials Laboratory – 2<sup>nd</sup> year module
- Design of Reinforced Concrete Elements – 3<sup>rd</sup> year module
- Design of Reinforced Concrete Structures – 3<sup>rd</sup> year module
- Design of Prestressed Concrete Structures
- Capstone Design – 4<sup>th</sup> year module
- Behaviour and Design of Reinforced Concrete Structures – MSc module

Department of Architecture

- Structural Mechanics I – 1<sup>st</sup> year module
- Structural Mechanics II – 1<sup>st</sup> year module
- Reinforced Concrete Structures – 2<sup>nd</sup> year module

2001-2003     *Supervisor*     *Downing College – University of Cambridge*

- Structural Mechanics - Engineering Tripos
- 2001-2002 for part IB, 2002-2003 for parts IA and IB.

2001-2003     *Course Demonstrator*     *Engineering Department, University of Cambridge*  
 Structural Design Project – Engineering Tripos Part IA.

## MEMBERSHIPS

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2017-present     *Republic of Cyprus - Ministry of Education – Academic advisor and member of the committee for the preparation of the examinations papers, for governmental positions in the field of civil engineering*

2000-present     *Institute of Civil Engineers - UK.*

1998-present     *Technical Chamber of Greece.*

## SCHOLARSHIPS & AWARDS

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2024     *Teaching award – School of Engineering – University of Cyprus*

2005     *Institute of Civil Engineers – South West Region Merit Awards 2005: Remediation scheme to stabilise ancient mine works on a stretch of railway Cornwall. Involved in the design for Tony Gee & Partners.*

2000-2003     *European Union’s Training and Mobility of Researchers.*

- 2003 *W G Collins Endowment.*  
 2002 *Fitzwilliam College Trust.*

#### PROFESSIONAL TRAINING

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- 29-30/06/2007 KEE, *Eurocode 8: Design of Structures for Earthquake Resistance*, ETEK, Hilton Park, Nicosia.  
 21/03/2005 Thomas Telford Training, CDM Regulations 1994: the 2002 Update, London.  
 10/11/2004 The Institute of Structural engineers, *Precast Concrete Integral Bridge Design*, London.  
 16-17/09/2004 SEDEC, *Practical seismic Design: Principles and Applications*, Imperial College, London.  
 06/05/2004 Health and Safety-ICE Core Objective M6, *Specialization*, TV012, Slough.  
 01/04/2004 Health and Safety-ICE Core Objective P5, *Legislation*, TV009, Slough.  
 03/2004 Network Rail, *Medical Certificate - Track Safety*, GE/RT8067  
 03/03/2004 Cemediast UK, *Waterproofing of Concrete Structures*, Cobham, Surrey.  
 30/01/2004 Health and Safety-ICE Core Objective E7, *Site and General Safety*, TV026, Slough.  
 01/2004 The Steel Construction Institute & Corus, *Steel in Construction*, Croydon.

#### PUBLICATIONS

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##### JOURNAL

- Filippos Alogdianakis, Dimos C. Charmpis and Ioannis Balafas, *Macroscopic effect of distance from seacoast on bridge deterioration – Statistical data assessment of structural condition recordings*, Structures, Volume 27, Pages 319-329, 2020.
- Tastani S.P., Balafas, I., Dervisis A. and Pantazopoulou, S. J. *Effect of core compaction on deformation capacity of FRP-jacketed concrete column*, Construction and Building Materials, Vol. 47, 1078-1092, 2013. (scopus citations: 9)
- Balafas, I. and Burgoyne, C. J. *Economic design of beams with FRP rebar or prestress*, Magazine of Concrete Research, Vol. 64, No.10, 885-898, 2012. (scopus citations: 4)
- Balafas, I. and Burgoyne, C. J. *Modeling the structural effects of rust in cover concrete*, ASCE Journal of Engineering Mechanics, Vol. 137, No.3, 175-185, 2011. (scopus citations: 24)
- Balafas, I. and Burgoyne, C. J. *Environmental effects on cover cracking due to corrosion*, Cement and Concrete Research, Vol. 40, Issue 9, 1429-1440, 2010. (scopus citations: 27)

##### CHAPTERS IN BOOK

- Pantazopoulou, S., Balafas, I., Bournas, D., Guadagnini, M., D'Antino, T. Lignola, G.P., Napoli, A., Pellegrino, C., Prota, A., Realfonzo, R., Tastani, S., *Confinement of RC Elements by Means of EBR FRP Systems*, in Design Procedures for the Use of Composites in Strengthening of Reinforced Concrete Structures State-of-the-Art Report of the RILEM Technical Committee 234-DUC, pp.392, 2016.

##### CONFERENCE

- Balafas I., Alogdianakis F. and Charmpis D. C. and, 2017 “*Scheduling bridge rehabilitations based on probabilistic structural condition model, risk attitude and life cycle cost*”, Proceedings of the 51st ESReDA

Seminar, Clermont-Ferrand, France, October 20th – 21st, 2016.

Charmpis D. C., Alogdianakis F., Balafas I., 2017 “*A method to predict bridge conditions based on recorded bridge inspection data*”, Proceedings of the 51st ESReDA Seminar, Clermont-Ferrand, France, October 20th – 21st, 2016.

Alogdianakis F., Charmpis D. C. and Balafas I. “Using calibrated probabilistic deterioration information to optimize the rehabilitation schedule of bridges”, IABMAS, International Association for Bridge Management and Safety, Foz do Iguacu , Brazil ,2016.

Alogdianakis, F., Charmpis, D.C., Balafas, I., 2015. Using existing inspection data to probabilistically estimate the time-to-rehabilitation for concrete bridges exposed to deicing salts and humidity. International Conference on Concrete Repair Rehabilitation and Retrofitting (ICCRRR 2015), Leipzig, Germany, pp. 949-957.

Alogdianakis, F., Charmpis, D.C., Balafas, I., 2015. “Probabilistic estimation of the time-to-rehabilitation for deteriorating bridges”, 1st International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2015), Crete Island, Greece, 2015.

Alogdianakis, F., Balafas, I., Charmpis, D.C. 2014. Environmental effects on bridges – Statistical durability study based on existing inspection data. 2nd International Conference on Innovations on Bridges and Soil-Bridge Interaction (IBSBI 2014), Athens, Greece, pp. 161-168.

Charmpis, D., Dimitriou, L., Balafas, I., Alogdianakis, F., 2014, Optimal bridges' upgrade programming under technical, economic and social considerations, OPT-i 2014 - 1st International Conference on Engineering and Applied Sciences Optimization, Proceedings, pp. 2234-2244.

Balafas, I. *Chloride migration in concrete covers exposed to fluctuating environmental conditions*, 9<sup>th</sup> HSTAM International Congress on Mechanics, Limassol, Cyprus, 12-14 July 2010.

Balafas, I. *Prestressing constraints in continuous concrete bridges with uniform sections*, 16<sup>th</sup> Greek Concrete Conference, Cyprus - Paphos, 21-23 October 2009.

Balafas, I. *Section variation in continuous concrete bridges*, accepted for publication on the 16<sup>th</sup> Greek Concrete Conference, Cyprus - Paphos, 21-23 October 2009.

Burgoyne, C. J. and Balafas, I. *Why FRP is not a financial success?*, Fibre Reinforced Polymers in Reinforced Concrete Structures, 8<sup>th</sup> International Conference, Patras, Greece, pp 50-51, July 2007.

Balafas, I. and Burgoyne, C. J. *Economic viability of structures with FRP reinforcement and prestress*, 4<sup>th</sup> International Conference on Advanced Composite Materials in Bridges and Structures, Paper 186, Calgary, Alberta, July 2004.

Balafas, I. and Burgoyne, C. J. *Optimal cost design for beams prestressed with FRP tendons*, Fibre Reinforced Polymers in Reinforced Concrete Structures, Sixth International Conference, July 2003: 1298-1308.

Balafas, I. and Burgoyne, C. J. *International round robin tests for FRP reinforcement: pullout and splitting test results*, ConFibreCrete TMR-Network, Report No RRT/08, Engineering Department Cambridge University, July 2002.

Balafas, I. and Burgoyne, C. J. *Initial cost considerations on the use of fibre reinforced plastics in reinforced concrete structures*, Research Leading to the Development of Design Guidelines for the Use of FRP in Concrete Structures, 2<sup>nd</sup> ConFibreCrete Conference, Corfu, Greece, June 2002.

JOURNAL REVIEWER

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ASCE – Journal of Composites for Construction (from 2011)

Structure and Infrastructure Engineering - Taylor & Francis (from 2014)

Journal of Civil Engineering and Science - World Academic Publishing (WAP) (from 2014)

ASCE – Journal of Structural Engineering (from 2015)

Computers and Concrete – Techno Press (from 2017)

Hong Kong – Reviewer in University Grants Committee (UGC) (from 2020)

REFEREES (UPON REQUEST)

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