



DICAM
DEPARTMENT OF CIVIL, ENVIRONMENTAL AND MATERIALS ENGINEERING

SEMINARS ON STRUCTURAL OPTIMIZATION

In the framework of the ERASMUS education exchange program, the Department of Civil, Environmental and Materials Engineering – DICAM is glad to host Prof Nildem Tayşı from the University of Gaziantep, Turkey.

Prof Tayşı will provide three seminars on structural optimization strategies, in particular:

June 20, 3:00 pm, @ LAMC

Introduction to Structural Shape Optimization

- Design optimization
- Optimization procedure
- Structural optimization types
- Optimization Methods
 - Gradient Based Methods
 - Heuristic Methods
- Engineering applications of optimization
- Model building
- Basic components of an optimization problem
- Classification of Optimization Problem

June 21, 10:00 pm, @ LAMC

Genetic Algorithms (GA) in Optimization - Advantages and drawbacks of GA's

- Most important parameters for success of a GA's
- Terminology of GA's
- Three basic operations
 - Reproduction
 - Crossover
 - Mutation
- Applications of GA's

June 22, 3:00 pm, @ LAMC

Analysis and optimization of truss and frame structures under static and dynamic loads - Algorithm for structural shape optimization

- Geometric modelling
- Static analysis
- Free vibration analysis
- Genetic Algorithm
- Transient dynamic analysis
- Examples
- Conclusions

Join us in welcome Prof Tayşı

Prof. Francesco Ubertini



Prof Tayşi Short Bio

Degree	Dept	University	Year
BS	Civil Engineering	University of Gaziantep	1995
MSc	Civil Engineering	University of Gaziantep	1998
PhD	Civil Engineering	University of Gaziantep	2005
Doc. / Prof.			

MSc Subject: Analysis and Optimum Design of Box Girder Bridges (**Supervisor** Prof.Dr. Mustafa Özakça)

PhD subject: Analysis and Optimum Design of Structures Under Static and Dynamic Loads (**Supervisor** Prof. Dr. Mustafa Özakça and Prof. Dr. İbrahim H. Güzelbey)

Lectures: Mechanics of Materials, Statics, Structural Optimization, Introduction to Matrix Methods in Structural Analysis, Structural Analysis, Theory of Elasticity

Selected scientific papers:

1. N. Tayşi and M. Özakça, (2002), "Free vibration analysis and shape optimization of box girder bridges in straight and curved planform", Engineering Structures: 24, 625-637.
2. M. Özakça and N. Tayşi, (2003), "Analysis and shape optimization of variable thickness box girder bridges in curved platform", EJSE (Electronic Journal of Structural Engineering): 3.
3. M. Özakça, N. Tayşi and F. Kolcu, (2003), "Buckling analysis and shape optimization of elastic variable thickness circular and annular plates Part I: Finite element formulation", Engineering Structures: 25, 181-192.
4. M. Özakça, N. Tayşi and F. Kolcu, (2003), "Buckling analyses and shape optimization of variable thickness circular and annular plates Part II: Shape optimization", Engineering Structures: 25, 193-199.
5. M. Özakça, N. Tayşi and F. Kolcu, (2003), "Buckling optimization of variable thickness prismatic folded plates", Thin Walled Structures: 41, 711-730.
6. N. Tayşi, M.T. Göğüş and M. Özakça, (2008), "Optimization of arches using genetic algorithm". Computational Optimization and Applications: 41, 377-394.
7. N. Tayşi, (2010), "Application of neural network models on analysis of prismatic structures", Scientific Research and Essays: 5(9), 978-989.
8. N. Tayşi, (2010), "Determination of thickness and stiffener locations for optimization of critical buckling load of stiffened plates", Scientific Research and Essays: 5(9), 897-910.
9. N. Tayşi, M. T. Göğüş and M. Özakça, (2010), "Structural analysis of arches in plane with a family of simple and accurate curved beam elements based on mindlin-reissner model", Journal of Mechanics (basılmak üzere beklemekte).