

Lecturers

Name: Andreas J. Kappos

Academic Background: DiplEng, MSc, PhD, FICE

Field of Specialization: PhD in Anti-sensitive concrete constructions

Employer: Aristotle University of Thessaloniki & University of London

Previous Positions: Professor at Department of Civil Engineering of AUTH and Head of the Structures Section from 2008 to 2010

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Name: Vasileios Papanikolaou

Academic Background: MSc DIC, PhD

Field of Specialization: PhD in Reinforced concrete - Finite elements

Employer: Aristotle University of Thessaloniki

Previous Positions: Lecturer at Aristotle University of Thessaloniki

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Name: Konstantinos Katakalos

Academic Background: Msc, MSc, PhD

Field of Specialization: Division of Structural Engineering (D.S.E.)

Employer: Aristotle University of Thessaloniki

Previous Positions: Teaching Assistant at Aristotle University of Thessaloniki

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Name: Dimitrios Pitilakis

Academic Background: Dynamic Soil Interaction - Founding in Geotechnical Seismic Engineering

Field of Specialization: Geoscience, Engineering, Crafts and Construction, Civil Engineering

Employer: Aristotle University of Thessaloniki

Previous Positions: Lecturer in the Department of Civil Engineering, Aristotle University of Thessaloniki

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Name: Athanasios Vratsikidis

Academic Background: M.Sc. in Civil Engineering

Field of Specialization: Soil Dynamics and Geotechnical Earthquake Engineering Research Group

Employer: Aristotle University of Thessaloniki

Previous Positions: Civil Engineer at GEOTER DIDASKALOU S.P.

Contacts:

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Name: Christos Petridis

Academic Background: M.Sc. in Civil Engineering

Field of Specialization: Civil Engineer - Structural division

Employer: Aristotle University of Thessaloniki

Previous Positions: ICT Department | Rapid Deployable Corps at NATO

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Name: Efthymiou Evangelos

Academic Background: PhD in Metal Constructions

Field of Specialization: Civil Engineer - Metal Constructions

Employer: Aristotle University of Thessaloniki

Previous Positions: Member, Supervisors of the Civil Engineering Department of the Aristotle University of Thessaloniki

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Name: Nikos Poulianas

Academic Background: ALBA Graduate Business School

Field of Specialization: H&S Manager - TITAN Thessaloniki Cement Plant

Employer: TITAN Thessaloniki Cement Plant

Previous Positions: Mechanical Project Engineer at C&M Engineering S.A.

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CV: [Link to CV](#)

Name: Domenikos Vamvakaris

Academic Background: BSc in Geology, MSc in Geophysics, PhD in Seismology

Field of Specialization: Researcher Seismologist - Laboratory Teaching Staff at Aristotle University of Thessaloniki

Employer: Aristotle University of Thessaloniki

Previous Positions: Geologist (trainee) at Institute of Geology and Mineral Exploration

Contacts:

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CV: [Link to CV](#)



Name: Dimitrios Mamoglou

Academic Background: Civil Engineering Master Degree (Diploma)

Field of Specialization: Civil Engineer at Deep Excavation ILC

Employer: Co-development partner at Deep Excavation LLC, New York, USA (software development, geo engineering documentation verification, geotechnical design for various projects, professional training, participation in different geo technical professional events as a consultant)

Previous Positions: Participation to the research program of Aristotle University of Thessaloniki

Contacts:

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Name: Anna Karatzetzou

Academic Background: MsC, PhD

Field of Specialization: PhD in Civil Engineering

Employer: Aristotle University of Thessaloniki

Previous Positions: Teaching Position: University Fellow, Class: Seismic Design of structures, Department of Civil Engineering T.E., TEI of Thessaly, Trikala, Greece.

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Name: Dimitrios Zimos

Academic Background: MsC

Field of Specialization: MEng/ MsC in Civil Engineering

Employer: Basler & Hofmann

Previous Positions: Advanced Technical Services at Robert Bird Group

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Course Description

Title: How to get away with an earthquake

Fields of activity: Agronomics/Forestry, Architectural Engineering, Architecture, Civil Engineering, Conservation-Restoration, Environmental Engineering, Rural and Surveying Engineering, Territory Engineering

Examination type: Written Exam

Number of ECTS credits issued: 1

Learning Goals and Objective: The aim of this course is for the participants to acquire general knowledge of different aspects of structural safety. Earthquakes, materials' resistance and structural protection are the key topics participants will tackle during the learning activities of this course.

Syllabus

Name of activity	Seismic Design and Assessment of Bridges
Number of working hours	3
Type of activity	Lecture
Lecturer	Andreas Kappos
Short summary of content	This lecture will present an overview of the way bridges respond to earthquakes, the types of damage commonly sustained, and a brief comparison with other common types of bridge damage. Then the basic principles of seismic design of bridges will be presented with focus on Eurocode 8 -part 3, the code currently used in Greece and several other countries in Europe.
Bibliography	<p>Priestley, M.J.N., F. Seible and G.M. Calvi (1996), "Seismic Design and Retrofit of Bridges." John Wiley and Sons, Inc. (Editor), New York, 686 pp. (ISBN: 047157998X)</p> <p>Chen, W.F. and Duan, L. (Editors) (2003), Bridge Engineering: Seismic Design, CRC Press; ISBN: 0849316839</p> <p>Kappos, A.J., Saiidi, M., Aydinoglu, N. and Isakovic, T. (editors), "Seismic Design and Assessment of Bridges: Inelastic Methods of Analysis and Case Studies", Springer, Dordrecht, 2012</p>
Expected effect	After attending the lecture, you will be familiar with key issues regarding vulnerability of bridges to earthquakes and the way bridges are designed to mitigate seismic damage. The lecture is meant to act primarily as a stimulus for further studying the challenging and fascinating topic of design bridges against earthquakes. Attendees who are already familiar with seismic design of buildings and/or other structures will be able to follow up the lecture with further reading that will eventually allow them to be involved in actual seismic design of bridges.

Name of activity	Experimental testing of materials and structures under earthquake loading: from theory to application
Number of working hours	1
Type of activity	Lecture
Lecturer	Vasileios Papanikolaou, Konstantinos Katakalos
Short summary of content	Introduction to material and structural testing under static and dynamic (earthquake) loading. Material properties. Experimental setups. Acquisition systems. Interpretation of experimental results.
Bibliography	No bibliography needed
Expected effect	Students will extend their knowledge on recent developments in material and structural testing under earthquake loading and familiarize themselves with laboratory procedures through live attendance.

Name of activity	Experimental testing of materials and structures under earthquake loading: from theory to application
Number of working hours	3
Type of activity	Laboratory Work
Lecturer	Vasileios Papanikolaou, Konstantinos Katakalos
Short summary of content	Material testing/tension and compression. Structural member testing / monotonic and cyclic.
Bibliography	No bibliography needed
Expected effect	Students will extend their knowledge on recent developments in material and structural testing under earthquake loading and familiarize themselves with laboratory procedures through live attendance.

Name of activity	Geotechnical earthquake engineering
Number of working hours	2
Type of activity	Lecture
Lecturer	Dimitrios Pitilakis, Athanasios Vratsikidis, Christos Petridis
Short summary of content	Basic notions of geotechnical earthquake engineering, with emphasis on the earthquake resistant design of structures. The lecture comprises of the basic theoretical background and hands-on experience at the shaking table of the Laboratory of Soil Dynamics and Geotechnical Earthquake Engineering.
Bibliography	Kramer, S. L., Geotechnical Earthquake Engineering, Pearson; 1 edition (January 7, 1996)
Expected effect	Students will get to get a feeling about geotechnical aspects in earthquake engineering. Furthermore, students will have hands-on experience at the shaking table experiments, where they will witness earthquake engineering tests.

Name of activity	Geotechnical earthquake engineering
Number of working hours	2
Type of activity	Laboratory Work
Lecturer	Dimitrios Pitilakis, Athanasios Vratsikidis, Christos Petridis
Short summary of content	Basic notions of geotechnical earthquake engineering, with emphasis on the earthquake resistant design of structures. The lecture comprises of the basic theoretical background and hands-on experience at the shaking table of the Laboratory of Soil Dynamics and Geotechnical Earthquake Engineering.
Bibliography	Kramer, S. L., Geotechnical Earthquake Engineering, Pearson; 1 edition (January 7, 1996)
Expected effect	Students will get to get a feeling about geotechnical aspects in earthquake engineering. Furthermore, students will have hands-on experience at the shaking table experiments, where they will witness earthquake engineering tests.

Name of activity	Metal structures within resilience and sustainability framework
Number of working hours	2
Type of activity	Lecture
Lecturer	Evangelos Efthymiou
Short summary of content	The lecture aims at introducing metal applications in construction and their contribution to structural resilience and sustainability, with emphasis on steel and aluminium systems.
Bibliography	No bibliography needed
Expected effect	The attendants are expected to increase familiarity with two of the most commonly metallic materials in construction, namely steel and aluminium from resilience and sustainability point of view.

Name of activity	TITAN Company Visit
Number of working hours	2
Type of activity	Company Visit
Lecturer	Nikos Poulianas
Short summary of content	Introduction and walkthrough of the TITAN groupation
Bibliography	No bibliography needed
Expected effect	The participants will get introduced to this company and get an insight into their work. TITAN Group is an independent producer of cement and building materials.

Name of activity	Visit to the Seismological Station (Geophysical Laboratory – AUTH)
Number of working hours	1
Type of activity	Company Visit
Lecturer	Domenikos Vamvakaris
Short summary of content	The presentation would be based in 3 main parts: <ul style="list-style-type: none"> - What is an earthquake, why and how it occurs - Protection measures - Results of an earthquake
Bibliography	No bibliography needed
Expected effect	After this presentation, all participants would have a main idea about what is an earthquake and the reason of its occurrence. Mainly, they should know what to do before, during and after an earthquake, in order to protect themselves.

Name of activity	Design of Deep Excavations - Methods and Software Application
Number of working hours	2
Type of activity	Lecture
Lecturer	Dimitrios Mamoglou
Short summary of content	The 2 - hour lecture with the title "Design of Deep Excavations - Methods and Software Application" scopes to the presentation of methods and challenges in the design of deep excavations and the use of seismic design. During the lecture, we will design and optimize some deep excavation models supported by tiebacks and struts, using the tools of our software program DeepEX.
Bibliography	No bibliography needed
Expected effect	The course participants will be introduced to the significance of deep excavation design and get familiar with design methods and the use of software in project design.

Name of activity	Natural hazard disaster and crisis management strategies emphasizing on seismic hazard. Seismic risk assessment: The case of Thessaloniki city.
Number of working hours	1,5
Type of activity	Lecture
Lecturer	Anna Karatzetzou
Short summary of content	Definition of the main technical terminology: Natural Hazards, disaster, crisis, seismic hazard, vulnerability, exposure, risk, lessons learned, methodologies for risk assessment at urban scale, hazard and risk maps, the case of Thessaloniki, management-mitigation strategies.
Bibliography	No bibliography needed
Expected effect	The participants will learn the main technical terminology on the subject and through actual case studies will see how engineers evaluate in practice the seismic risk.

Name of activity	Seismic response analysis of a soil column with Opensees.
Number of working hours	2
Type of activity	Tutorial
Lecturer	Anna Karatzetzou
Short summary of content	Opensees is a free finite element software. It allows users to create both serial and parallel finite element computer applications for simulating the response of structural and geotechnical systems subjected to earthquakes and other hazards.
Bibliography	No bibliography needed
Expected effect	The participants will have a first contact with this finite element software. The important thing is that the software is free and thus anyone who wants to work on this more can download it.

Name of activity	Existing Reinforced Concrete Structures
Number of working hours	1
Type of activity	Project Work
Lecturer	Dimitrios Zimos
Short summary of content	Emphasis will be put on understanding the importance of estimating the strength and failure modes of R/C members.
Bibliography	<ol style="list-style-type: none"> 1. European Committee for Standardization (CEN), "Eurocode 8. Design of structures for earthquake resistance. Part 3: Assessment and retrofitting of buildings", EN 1998-3, 2005. 2. Fardis M. N., "Seismic Design, Assessment and Retrofitting of Concrete Buildings: based on EN-Eurocode 8", Springer Netherlands, 2009. https://doi.org/10.1007/978-1-4020-9842-0 3. Priestley N. M. J., Verma R, Xiao Y., "Seismic shear strength of reinforced concrete columns", Journal of Structural Engineering, 1994;120(8):2310-2329. 4. Zimos, D. K., "Modelling the Post-Peak Response of Existing Reinforced Concrete Frame Structures Subjected to Seismic Loading", PhD Thesis, City, University of London, 2017.
Expected effect	<p>Learning Goals</p> <ul style="list-style-type: none"> - Practicing predicting the strength and failure modes of some simple R/C members (beams, columns, and shear walls).

Name of activity	Existing Reinforced Concrete Structures
Number of working hours	3
Type of activity	Lecture
Lecturer	Dimitrios Zimos
Short summary of content	This lecture will touch upon areas relating to the assessment of existing Reinforced Concrete (R/C) structures. Emphasis will be put on understanding the importance of estimating the strength and failure modes of R/C members. Lastly, a short review of the philosophy of retrofitting existing R/C structures and typical solutions will be presented.
Bibliography	<ol style="list-style-type: none"> 5. European Committee for Standardization (CEN), “Eurocode 8. Design of structures for earthquake resistance. Part 3: Assessment and retrofitting of buildings”, EN 1998-3, 2005. 6. Fardis M. N., “Seismic Design, Assessment and Retrofitting of Concrete Buildings: based on EN-Eurocode 8”, Springer Netherlands, 2009. https://doi.org/10.1007/978-1-4020-9842-0 7. Priestley N. M. J., Verma R, Xiao Y., “Seismic shear strength of reinforced concrete columns”, Journal of Structural Engineering, 1994;120(8):2310-2329. 8. Zimos, D. K., “Modelling the Post-Peak Response of Existing Reinforced Concrete Frame Structures Subjected to Seismic Loading”, PhD Thesis, City, University of London, 2017.
Expected effect	<p>Learning Goals</p> <ul style="list-style-type: none"> - Appreciating the goals of assessing an existing R/C structure and what an assessment entails. - Understanding the significance of predicting the strength and failure modes of R/C members. - Getting a glimpse of the philosophy of retrofit and examples of application.

Name of activity	Examination Preparations
Number of working hours	1,5
Type of activity	Examination
Lecturer	Anna Karatzetzou
Short summary of content	Preparation for the final examination.
Bibliography	All the lectures, laboratory visits, tutorials and project work.
Expected effect	The participants will be given the chance to prepare for the final examination, and ask clarifications from the lecturer.

Name of activity	Examination
Number of working hours	2
Type of activity	Written Exam
Lecturer	Anna Karatzetzou
Short summary of content	Final examination in the form of written exam.
Bibliography	All the lectures, laboratory visits, tutorials and project work.
Expected effect	Sum up of everything covered throughout the course.

Pre-materials

Name	OpenSees - Example
Topic/field	Geotechnical earthquake engineering tools
Short description	<p>This link leads to the example that will be explained and run during the tutorial.</p> <p>OpenSees, the Open System for Earthquake Engineering Simulation, is an object-oriented, open source software framework. It allows users to create both serial and parallel finite element computer applications for simulating the response of structural and geotechnical systems subjected to earthquakes and other hazards.</p>

Name	Earthquake Protection
Topic/field	Visit to the Seismological Station tools
Short description	<p>This is a pdf with guidelines on how to protect yourself during an earthquake, which will be needed to attend the Seismological Station visit (Geophysical Laboratory – AUTH).</p>