

SHORT COURSE ON

LIQUEFACTION AROUND MARINE STRUCTURES

Wave-induced liquefaction and its effects on marine structures

This two day course introduces you to wave-induced liquefaction in the marine environment and its effects on structures. Although the focus will be on wave-induced liquefaction, a brief introduction to seismic-induced liquefaction will be also included. The physics of wave-induced liquefaction and mathematical modelling will be described. Potential threats to marine structures will be discussed. Counter-measures will be included in the discussions. Discussions will be supplemented by video movies from the CD-ROM accompanying the book Liquefaction Around Marine Structures by B. Mutlu Sumer.

Liquefaction refers to the state of the soil in which the effective stresses between individual soil grains vanish and the water-sediment mixture as a whole, therefore, acts like a fluid. Under this condition, the soil fails, therefore precipitating failure of the supported structure such as pipelines, sea outfalls, breakwaters, seawalls, pile structures, gravity structures, rock berms, etc. A clear hydrodynamic/geodynamic understanding makes it relatively easier for a consulting engineer to assess liquefaction potential, to make engineering predictions and recommendations as to how to avoid potential risks. This course essentially addresses these issues.

COURSE TOPICS

- Physics of wave-induced liquefaction
- Residual liquefaction and its modelling
- Momentary liquefaction and its modelling
- Liquefaction of two-layer soil systems under waves
- Floatation/sinking of pipelines and other marine objects under waves
- Sinking failure of drag embedment anchors under waves
- Liquefaction under standing waves
- Liquefaction in cohesive soils (sand-clay and silt-clay mixtures)
- Failure of gravity based structures due to liquefaction
- Counter-measures against liquefaction failure

TARGET GROUP AND PREREQUISITES

Professionals in hydraulics, geotechnics or engineering and management, working with design, installation and commissioning of marine structures; researchers in coastal, ocean and marine civil engineering; graduate and post graduate students (for the latter target group, the academic workload is equivalent to 1.5 ECTS points with grades Pass/Fail). You should preferably have a background in coastal, port or marine civil engineering.

DATE AND TIME

26-27 September 2019, 09:00-17:00.

LOCATION AND VENUE

Istanbul Technical University, ARI Teknokent,
34467 Sarıyer, Istanbul

FEES AND DISCOUNTS

Standard price: 900 Euro

Discounts:

- 33% for 2nd and subsequent participants from the same company, university or academic institution.
- 10% discount for the IAHR members.
- For graduate students a limited number of scholarships are available. Your CV and a short letter of recommendation from your supervisor should be sent in.
- All prices include taxes.

THE FEE INCLUDES

- Training material; hard copy of powerpoint presentations of the lectures
- Book, "Liquefaction around Marine Structures" of B. Mutlu Sumer, signed by the author
- Lunch and refreshments
- Training certificate

LANGUAGE

Lectures and training material are in English

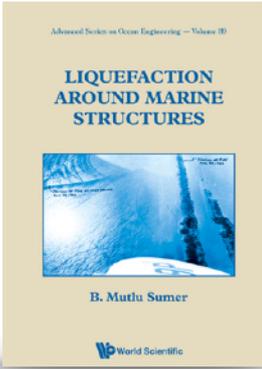
REGISTRATION AND CONTACT

Registration closes 3 weeks before the course. A minimum number of participants are required for the course to proceed. BM SUMER Consultancy & Research reserves the right to reschedule the course up to 3 weeks prior to course start. Contact:

Ozgur Kirca

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Book by B. Mutlu Sumer
[Liquefaction Around Marine Structures](#).
Copy of this textbook will be provided to the course participants.

INSTRUCTORS

Prof. B. Mutlu Sumer

Mutlu Sumer was previously Professor at the Technical University of Denmark. He has more than 40 year experience in research and consultancy, and is one of the leading scientists in the world in seabed-structure interaction; covering wave-induced liquefaction, flow and scour around marine structures, forces on and hydroelastic vibrations of cylinders such as marine pipelines, and sediment transport.



Assoc. Prof. V.S. Ozgur Kirca

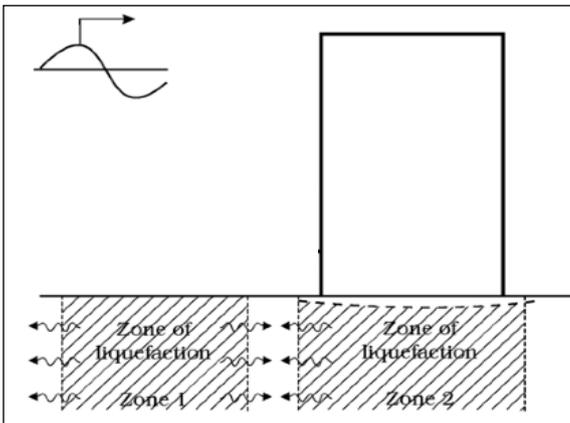
V.S. Ozgur Kirca is an Associate Professor at Istanbul Technical University. He has been actively involved in research and consultancy for more than 15 years in different aspects of Coastal, Offshore and Hydraulic Engineering; including topics related to wave-induced liquefaction, scour in fluvial and marine environment, wave-structure interaction, sediment transport and coastal protection structures.



Four concrete caissons sunken due to seabed liquefaction induced by storm waves.



Damage of the quay wall at Derince Port due to liquefaction of the backfill after 1999 Kocaeli earthquake.



Zones of liquefaction beneath a caisson breakwater. Zone 1 due to standing waves and Zone 2 due to rocking of the caisson.

This event is co-sponsored by IAHR.



For registration to the course, visit our web site at:

<http://bmsumer.com/short-courses/short-courses-and-events-calendar/>

BM SUMER Consultancy & Research is a research oriented-company active in Coastal, Offshore, Hydraulic, River, Marine Civil Engineering; with speciality areas such as scour / scour protection around marine and hydraulic structures, marine soil liquefaction and its implications for marine structures, current and wave loading on and hydroelastic vibrations of marine / hydraulic structures including pipelines, river engineering, coastal and river sediment transport.

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