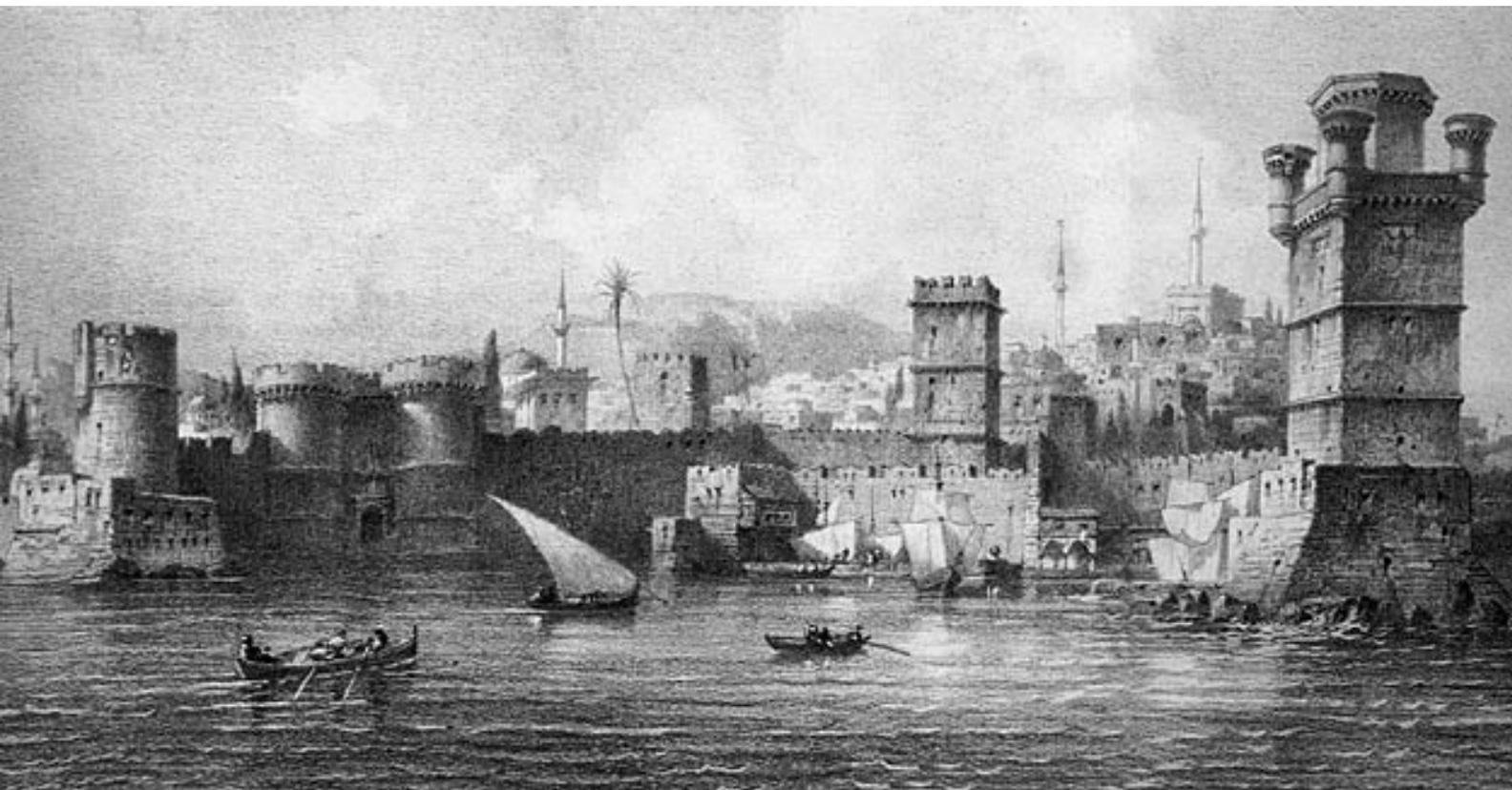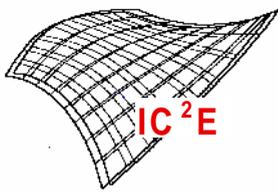**IC²E**

International Centre for
Computational Engineering
Rhodes-Greece

Programme
2011-2012

IC²E

ABOUT IC²E

International Centre for Computational Engineering in Rhodes is a 'not for profit' organisation with an initial funding by the Municipality of Rhodes and the Government of Greece. The main objective of the Centre is to provide higher education and training in Computational Engineering and related topics to students and professional engineers throughout the world. This aim will be achieved through running of 'live' and 'virtual' workshops, seminars and short courses on focussed themes delivered by leading international experts. Starting from the graduate level, participants will be able to attain advanced knowledge and follow the state-of-the-art of various topics in a comprehensive manner. The scope of topics will be broad based engineering sciences including topics from mechanics, structural safety, natural and engineered materials technology, biomechanics and computational intelligence with applications in structural, geotechnical, mining, petroleum, offshore and nuclear engineering. It is hoped that the attendees will include young researchers, professional engineers, computer analysts and applied mathematicians. Ample time will be available for formal and informal discussions between the participants and lecturers who will certainly enjoy the beautiful setting and the outstanding natural beauty of the island of Rhodes. The courses will be recorded on the first occasion and subsequently webcast to registered virtual attendees from around the world.

All events planned by the Centre will provide cutting-edge knowledge with an opportunity to discuss various related topics and case histories of applications.

COURSES FOR 2011-2012

IC²E Short Course on Constitutive Relations for Geomaterials (CORGE)
A residential course to be held at the City Centre Hotel
Rhodes, Greece
8 – 10 December 2011

COURSE OBJECTIVES

This 3-days short course is aimed at providing a theoretical, numerical and computational background to various constitutive models for geomaterials.

Constitutive relations for soils/rocks are typically based on the theory of plasticity that was originally developed for metals. However, the mechanical response of geomaterials is substantially different from that of metals. The main differences include the sensitivity of deformation and strength characteristics to confining pressure as well as the evolution of volume change that includes a transition from compaction to dilatancy. These differences give rise to interesting aspects of modelling, with which the engineers trained in classical metal plasticity may not be familiar. Assuming little previous knowledge, the participants will learn the basic approaches to modelling of mechanical behaviour of geomaterials. They will have hands-on experience of integrating some of the constitutive relations for chosen stress/strain histories and examining their performance in relation to the experimental data. The course will be 'software or vendor neutral' though an education code will be used for the purposes of explanation and illustration.
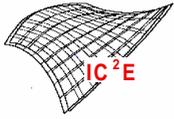
LECTURERS

Professor Poul Lade, Catholic University of Washington, USA

Professor Gyan Pande, Swansea University, UK
&
Professor Stan Pietruszczak, McMaster University, Canada

They will be assisted by Dr Stefanos Drakos, CEO, Stavrianos & **Drakos Ltd.**

WHO SHOULD ATTEND?

The course is aimed at graduate students and engineers in industry who wish to learn more about basics of modelling of non-linear behaviour of geomaterials. The course is also suitable for geotechnical engineers and consultants who want to develop a deeper understanding of using non-linear soil/rock models. The issues of transparency, robustness, theoretical soundness of various models available in commercial finite element codes will be a subject of discussion.

COURSE OUTLINE

The course will start with a description of the basic trends in the experimental response of granular materials will be examined under both drained and undrained conditions. This will be followed by an outline of basic concepts of the theory of plasticity including typical failure criteria for geomaterials. Next, the concepts of strain hardening will be introduced. The focus will be on the classical volumetric hardening (Critical State Model) as well as the deviatoric hardening.

The participants will take part in some numerical assignments that will involve simulations of standard 'triaxial' tests (in p-q space) under drained/undrained conditions.

EXAMPLES SESSIONS

The participants of the course in Rhodes will be encouraged to model a set of simple illustrative test configurations using either their own software or non-commercial educational software which will be provided. Ample time will be allowed for discussions in an informal environment.

REGISTRATION

The registration fees, inclusive of course notes, accommodation, lunches, morning/afternoon refreshments are as follows:

	Before 30 September 2011	After 30 September 2011
DELEGATES	€700	€850
STUDENTS	€300	€400

Payment Methods

- Cheques/Drafts, free of bank charges, should be made
payable to: "IC2E" and forwarded to
Dr S Drakos
- Alternatively, direct bank transfers (in Euros) can be made to:

ALPHA BANK
ACOUNT NO : 640 00 2002 019 496
IBAN: GR36 0140 6400 6400 0200 2019 496
BIC: CRBAGRAA

Please indicate clearly the participants' name and organization.

Please note: We do not have credit card facilities.

The course begins with registration on Thursday morning and ends with a final session on Saturday afternoon.

REGISTRATION AND FURTHER INFORMATION

You may please download the Registration Form on the next page and return it by post, fax or email to:

Dr S. Drakos
Etharhou Makariou 45,
Rhodes
Greece
fax:+302241036117
email: sdrakos@ic2e.org

Any queries relating to courses should be addressed to the Lecturers:

Professor Poul Lade, email: lade@cua.edu

Professor Gyan Pande, email: g.n.pande@swansea.ac.uk

&

Professor Stan Pietruszczak, email: pietrusz@mcmaster.ca

IC^{2}E Short Course on Finite Element Method in Geotechnical Engineering

Details to be announced

January 2012

IC^{2}E Short Course on Computational Intelligence for Engineers

Details to be announced

April 2012