



WORKSHOP

“MECHANICS AND MATERIALS IN ENGINEERING APPLICATIONS”



Organization of the workshop lies on the wider role of the Engineering Departments of the University of Aegean, to increase the public awareness and especially of the Chios island community in several Engineering aspects.

| | Presenter | Title of the presentation |
|-------------|--|--|
| 17:40-18:00 | Registration | |
| 18:00-18:10 | Assist. Professor N. ALEXOPOULOS University of the Aegean Department of Financial Engineering and Management | OPENING CEREMONY - INTRODUCTION THE NECESSITY TO SOLVE ENGINEERING PROBLEMS |
| 18:10-18:30 | Assoc. Professor P. PAPANIKOS University of the Aegean Department of Product and Systems Design Engineering  | STRUCTURAL OPTIMIZATION IN ENGINEERING APPLICATIONS The need for the development of cost-effective products in combination with the increased complexity and size of constructions has led designers and engineers to the adoption and use of optimization algorithms taking advantage of the versatility of the finite element analysis and increased computing power. The lecture will explore the optimization methodologies available to engineers, including shape and topological optimization. The application of these methodologies will be demonstrated through examples from a wide-range of engineering applications ranging from aeronautics to construction. The presented case studies are taken from undergraduate and post-graduate theses at the Department of Product and Systems Design Engineering of the University of the Aegean. |
| 18:30-18:50 | Assist. Prof. V. MOULIANITIS University of the Aegean Department of Product and Systems Design Engineering  | RECENT ADVANCES IN ROBOTICS – APPLICATIONS Recent advances in mechatronics, automatic control, sensors and actuators have allowed the development of sophisticated robotic systems. In addition to conventional applications in the industry, such as assembly or part processing, these systems can be used in new applications such as in medicine or in agricultural work. The current developments in robotics and their applications will be briefly presented. |
| 18:50-19:10 | Prof. Wenya LI Northwestern Polytechnical University, P.R. China Director of Shaanxi Key Laboratory of Friction Welding Technologies  | FRICTION-BASED WELDING : A USEFUL ENGINEERING APPLICATION OF AN ETERNAL ENEMY Friction has long been known as a general natural phenomenon, which commonly means the resistance encountered when one body is moved in contact with another. In most industrial cases, it is a giant enemy to present us from doing things, for example, in most machines friction consumes effort with the result that less work is got out than is put in. However, there are some cases we make good use of friction to manufacture things. Friction-based welding is a very good engineering example. The lecture will explore the mechanisms of welding by frictional heat, and a family of friction-based welding processes and their applications. |
| 19:10-19:30 | Prof. Roelf MOSTERT University of Pretoria, South Africa Head of Department of Materials Science and Metallurgical Engineering  | THE DEVELOPMENT OF A MULTI-DISCIPLINARY POST-GRADUATE CURRICULUM IN FORENSIC ENGINEERING The failure of components and structures is a topic of significant importance in engineering, law and society in general. Engineers from various disciplines perform forensic investigations and reconstructions of failure incidents, sometimes without following a rational and scientific process. The lecture will provide an overview of research performed by a number of stakeholders, with a view to establish a post-graduate and multi-disciplinary curriculum in Forensic Engineering in the context of a developing nation. The stakeholders involved inputs from law enforcement, forensic practitioners, and academia. |