

Advanced Course on Computational Mechanics and Simulations for Materials and Structures (CMMS 2022)

19 – 21 January 2022
(Through online mode)



Course Contents

The course has been planned to provide the necessary background and exposure to the engineering professionals on recent trends in computational mechanics and simulations for construction materials and structures starting from atomistic scale to macro scale through online lectures.

The broad topics covered are :

- Multi-scale modelling of cementitious composite
- Simulation of material response under high frequency and high strain
- FE modelling and simulations of structural components subjected to static and cyclic loading
- Computational modelling for coupled vehicle-bridge interactions in railway bridges
- Simulations for wave propagation-based SHM/NDT
- Elasto-hydro-aero simulations of offshore structures
- CFD-based simulations for wind response

The participants will be awarded with a Certificate on successful completion of the course.

Organized by



CSIR Integrated Skill Initiative

CSIR-Structural Engineering Research Centre
CSIR Campus, Taramani
Chennai – 600 113, India

Background

Computational mechanics and simulations materials and structures, specifically for construction materials, is of great importance in order to achieve economic design for sustainable infrastructure. It helps us to understand the influence of different parameters which cannot be possible through experimental means. This course will give a holistic view of the recent advancements in computational mechanics and simulations of construction materials and structures. It will cover the analytical tools and techniques starting from atomistic level to structural level subjected to static, cyclic, dynamic and environmental loads. The course will enable the participants to understand the relationship between Process-Structure-Property-Performance characteristics at material level and structural scale.

CSIR–SERC (Structural Engineering Research Centre), Chennai, Tamilnadu, India is a constituent Laboratory of CSIR (under Ministry of Science and Technology) devoted to R & D activities in the areas of Structural Engineering / Civil Engineering and related subjects. The research group at Special and Multifunctional Structures Laboratory (SMLS) of CSIR-SERC has unique capability in interdisciplinary research domain of Nano-Infra Engineering contributing to engineering sciences and engineering technology. The research is further extended to diverse analytical, numerical and experimental research in mechanics of material at atomistic level to performance evaluation at macro scale that will enable to develop materials linking response at different scales. The group has state-of-the-art facilities and expertise for carrying out both computational- and experimental studies on the response of evolved materials and performance at structure level. The course is aimed at disseminating the knowledge acquired by the research group at CSIR-SERC over the years of research in the area of computational mechanics and simulations for construction materials and structures. The course includes the theoretical background along with practical applications.

Objectives

The aim of this Course is to provide an opportunity for consultants, practicing engineers belonging to the public and private sector institutions, and other engineering professionals to familiarize themselves with the recent developments in the computational mechanics of construction materials and performance evaluation of structural components subjected to various kinds of loadings.

Faculty

Faculty for the course would comprise mainly scientists from CSIR- SERC.

Venue

Due to COVID-19 pandemic, this year CSIR-SERC is offering (CMMS 2022) through online mode to reach out many people during this difficult time.

Duration

Three days; Time 10.00 a.m. to 5.00 p.m.

Fee

Rs 1500/- per participant inclusive of GST for Indian participants and \$40 for foreign delegates. Course material (pdf format) and participation certificate shall be provided to all the registered participants. The brochure and details of the registration can be downloaded from the CSIR-SERC website <https://serc.res.in/>

Registration

Course registration can be completed through online by using the following link (<http://forms.serc.res.in/view.php?id=33087>). Please select the intended course, fill all the particulars and pay the registration fee by clicking the SBI collect in the registration form.

Requirements for online mode

Desktop/ Laptop/ Smartphone with good internet speed and sufficient data pack. A web link will be sent to the registered participants for joining the course.

For further details, please contact

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Course Coordinators (CMMS 2022)

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