

Introduction

Electrochemical corrosion is a well known problem that needs no introduction. All sea vessels, pipelines, offshore structures etc. suffer from this problem. A lot of effort, both by Academic institutes as well as by industry is going on to control this problem. Advances in computational electromagnetics have lead to several organizations working on tools to numerically model corrosion process. This has resulted in development of software packages that can optimize the design of cathodic protection systems. It is therefore necessary for all people working in the area of corrosion protection systems to get up-to-date knowledge of computer modeling of this complex phenomenon.

Aims and Scope

The primary aim of this course is to provide an exposure to numerical modeling of electrochemical corrosion process. with a hands on experience on solving simple models using the CorrosionExpert tool. The aim is also to introduce to the industry, the expertise and tools developed in IIT Bombay. In the whole process, the IIT Bombay team also hopes to learn from the participants the kind of problems they face, which could in turn lead to supplementing the features supported in their CorrosionExpert tool, and initiating sustained collaboration with the Industries and R&D organizations. Upon successful completion of course the participants should be able to:

- Setup a procedure within CorrosionExpert to model, solve, and validate a problem involving electrochemical corrosion
- Use the module to solve a real life problem

Attendee Profile

1. Engineers in General Maintenance Divisions, in charge of designing, fabricating and operating corrosion protection systems
2. Design engineers

3. Scientists and R&D consultants
4. Faculty from Engineering colleges

The prerequisite for this course is an undergraduate level exposure in electrochemical corrosion.

Course Contents

Mathematical preliminaries: Vector Calculus, Integral equations and Green's functions for solving Laplace equations, Matrix fundamentals and linear equation solution, Non-linear equation solution methods
Introduction to electrochemistry, corrosion, and corrosion protection
Formulation of corrosion as a boundary value problem., Polarization on surface of electrodes and its modeling.
Detailed description of the BEM method used and methods of solving the corrosion problem
Surface Mesh generation fundamentals including various standard file formats (CGNS etc.)
Hands on experience in generating triangular meshes using GridZ
Post processing fundamentals – Types of plots – vector, contour etc.

Faculty

The following faculty would deliver lectures
Prof. RPRC Aiyar, IIT Bombay
Prof. A.Q. Contractor, IIT Bombay
Prof. Gopal Shevare, IIT Bombay
Dr. Purnendu Misra, Ministry of Shipping
Prof. S. Banerjee, Zeus Numerix

The course is jointly organised with Zeus Numerix Pvt Ltd. which specializes in corrosion software development and consultancy. The lecture sessions will be complemented by hands-on-session training with the CorrosionExpert software.

Programme & Venue

The programme will be held at the Seminar Hall, Dept. of Aerospace Engineering, IIT Bombay during September 10 – 12, 2008.

Accommodation

Accommodation (during the course) will be arranged for a limited number of participants on advanced request. Accommodation charges are not included in the course fee and should be paid directly by the participant.

Course Fee

College Faculty Rs 6,000/-
Industrial and R&D Engineers Rs. 9,000/-

The cost includes a set of course notes, a software copy of the CorrosionExpert (limited edition) and working lunch. Travel and lodging arrangements is to be taken care of by the participants.

Kindly note that no income tax is to be deduced at source from the course fee payments as IIT Bombay is exempt from the same.

Registration

A crossed demand draft/cheque for the fee, drawn in favour of “**Registrar, IIT Bombay (CEP A/c)**” and the registration form (printed overleaf, use a photocopy if needed), duly filled and forwarded, should reach the coordinating office on or before September 5, 2008. The admissions are strictly on first come first-served basis. Please note that these are the last closing dates and admissions are normally closed as soon as the seats are full.

About the Organizers

The faculty and guest lecturers are involved in regular research, development, and training in electrochemical corrosion in IIT Bombay.

Zeus Numerix Pvt Ltd is among the successful business incubates of IIT Bombay. Zeus Numerix offers end-to-end corrosion solution; has its own in-house industry standard corrosion software, CorrosionExpert™ and it markets its own software products and services in India and abroad. Its clientele include Indian Defence, Nuclear, Aeronautics, and Space organizations, private industrial firms from Europe, USA, and Korea.

Organizers and Contact Information

The symposium is organized by Prof. RPRC Aiyar through the Office of CE & QIP, IIT Bombay, and Zeus Numerix Pvt. Ltd., www.zeusnumerix.com

Email aiyar@iitb.ac.in
contact@zeusnumerix.com

**Last date for receipt of registration forms:
September 05, 2008.**

Address for Correspondence:

Prof. RPRC Aiyar,
Course Coordinator,
CRNTS,
Indian Institute of Technology Bombay,
Powai, Mumbai – 400 076.
Phone : +91 (22) 2576 7654
Fax : +91 (22) 2572 3480
Email : aiyar@iitb.ac.in

CEP Short Term Course on

Computational Methods in Electrochemical Corrosion

September 10 - 12, 2008



OFFICE OF
CONTINUING EDUCATION &
QUALITY IMPROVEMENT PROGRAMMES

Indian Institute of Technology Bombay
Powai, Mumbai - 400076

REGISTRATION FORM

Short Term CEP on
Computational Methods in Electrochemical Corrosion
September 10 - 12, 2008

NAME (PRINT) : _____

_____ Gender: M / F

DESIGNATION : _____

ORGANIZATION: _____

EXPERIENCE : _____ Yrs.

MAILING ADDRESS :

TELEPHONE : _____ (O)

_____ (R)

FAX: _____ MOBILE: _____

EMAIL : _____

HIGHEST DEGREE : _____ UNIVERSITY: _____

IIT Guest House accommodation required?* YES / NO

PAYMENT: D.D. No.: _____ Dt. _____ Rs. _____
[Demand draft should be drawn in favour of "The Registrar, IIT Bombay (CEP A/c)"]

Date:

Signature of Applicant

*Guest House bill to be paid directly by participant.

(Use photocopies of this form, if needed)