2-Day course
Advanced Concrete Design using Eurocode 2

INTRODUCTION
This course complements the existing basic course conducted by BCA Academy, Design of Concrete Structures-Eurocode vs British Standard, to have a comprehensive coverage of the more advanced topics in Eurocode 2 (EC2). It covers the design of prestressed concrete structures, slender columns, strut and tie of concrete regions that do not conform to flexure, core walls, foundations, retaining walls, progressive collapse, as well as both prescriptive and performance-based design of fire resistance of concrete structures. In addition, this course will equip participants with fundamental understanding of structural behaviours. It also contains worked examples, where appropriate, to enable participants to grasp the full details of the design procedures. As cross reference will be made to the basic course on EC2, participants are encouraged to attend the basic course on EC2 before attending this advanced course.

This course is jointly organised by BCA Academy and Protective Technology Research Centre (PTRC) of Nanyang Technological University (NTU).

COURSE OBJECTIVE
After attending the course, participants will be able to:
1. Design simple prestressed structural members such as concrete planks and beams;
2. Apply strut and tie analysis of “disturbed” regions which do not comply to flexural principle; these include deep beams, walls with openings, foundations;
3. Design foundations and retaining walls;
4. Develop economical design of core walls;
5. Apply both the prescriptive and performance based design from EC2 Part 1-2 to satisfy fire resistance requirements;

COURSE OUTLINE
The topics that will be covered in the course are the design for:
• prestressed concrete
• corbels, deep beams and foundations using strut and tie analysis
• retaining walls
• core walls analysis and design
• slender columns for uniaxial and biaxial bending
• prescriptive and performance-based fire resistance
• progressive collapse

PROFILE OF SPEAKER
PROFESSOR TAN KANG HAI obtained his BSc(Eng) and PhD from the University of Manchester, UK. Prior to joining NTU, he worked as a graduate engineer in Ove Arup & Partners, UK. He is currently lecturing at the School of Civil & Environmental Engineering (CEE), Nanyang Technological University and had won the best teacher’s award in the CEE School in 2002 and short-listed for best teacher in 2001. A registered Professional Engineer in Singapore, Prof Tan has delivered courses on Eurocode 2 to BCA Academy, HDB learning hub, TYLin, AECOM, Mott MacDonald, Meinhardt and Ove Arup. He also conducts courses on EC2, EC3, and the Euro-structural fire code in Malaysia and Hong Kong on a regular basis.

Prof Tan had chaired four technical committees on the development of National Application Documents (NAD) for Singapore on EN1991-1-7 Accidental actions due to impact and explosion - NA (10/07), EN 1991-1-2 Actions on structures exposed to fire, EN 1994-1-2 Composite structures and EN 1993-1-2 Steel structures. He also worked with Ministry of Home Affairs and Defence Science and Technology Agency on mitigating progressive collapse of building structures due to blast. He is currently the Director of Protective Technology Research Centre, NTU and has written close to 120 Science Citation Index (SCI) top tier international journal paper publications and 160 international conference articles on steel and concrete structures.

DETAILS
4th Run: 17 & 20 Apr 2015
Time: 9.00am – 5.00pm
(Registration starts at 8.30am)
Venue: BCA Academy
Fee (incl of GST): S$960.00
Course materials, refreshments and lunches will be provided.

CPD POINTS
PEB: 12 PDUs
IES-ACES: 12 STUs

TARGET AUDIENCE
• Structural Engineers
• Resident Engineers
• Prestressed Concrete Specialist
• Academia

BCA ACADEMY
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2-day course on **Advanced Concrete Design using Eurocode 2**

**Course Date:**

**Time:** 9.00am to 5.00pm

**Venue:** BCA Academy

**Fee (incl of GST):** S$960.00

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### PART A - SELF-SPONSORED APPLICANTS

**Name (Dr/Mr/Mrs/Ms):**

(As per NRIC/Passport)

**NRIC/FIN/Passport No.:**

(As per NRIC/Passport)

**Designation:**

**Birth Date:** (DD/MM/YYYY)

**Company Name:**

**Residential Address:**

(for self-sponsored applicant)

(Residential address as per NRIC for Singaporeans & PRs)

**Hp No.:**

**Email:**

**Postal Code:**

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### PART B - COMPANY-SPONSORED APPLICANTS

**Name (Dr/Mr/Mrs/Ms):**

(As per NRIC/Passport)

**NRIC/FIN/Passport No.:**

(As per NRIC/Passport)

**Designation:**

**Email:**

**Company Name:**

**Company Address:**

**Contact Person:**

(HR Personnel)

**Fax No.:**

**Contact No.:**

**Postal Code:**

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### PART C - PAYMENT

(i) **Enclosed is Cheque No.:**

(ii) **Deduct from GIRO Account No.:**

(Note: Only company cheque or company GIRO will be accepted if the company is applying for funding or subsidy. The GIRO Account Number must be the same bank account number as indicated in the Direct Debit Authorisation form submitted to BCA.)

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### PART D - DECLARATION

By submitting and signing this application form, the self-sponsored or company-sponsored applicant agree to the terms and conditions below.

(i) **For SELF-SPONSORED APPLICATION:**

(ii) **For COMPANY-SPONSORED APPLICATION:**

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**TERMS AND CONDITIONS**

1. The company and individual applicant has read and understood the terms of the brochure (if available) and the application form.
2. The company and individual applicant warrant that the particulars given in the application form are accurate.
3. The Building and Construction Authority (BCA) can disclose to other government agencies any information relating to this application.
4. Payment for the course must be made to BCA before the course commencement date.
5. Any Direct Debit and Direct Credit Authorisation for GIRO applications previously signed and passed to BCA will apply to payments made under this course.
6. BCA reserves the right to accept or reject the application for whatever reason.
7. BCA shall at its discretion allocate a space to the registered applicant, based on availability.
8. BCA reserves the right to amend any details relating to the course, revise the course fees without prior notice, cancel or postpone the course.
9. No deferral of attendance is allowed. Refunds will be subject to approval by BCA.
10. Request for withdrawal or replacement must be made in writing. Requests are subject to approval by BCA.
11. Written request for replacement must reach BCA before the course commencement date. There will be no additional charges for suitable replacement.
12. The course is payable. - 3 working days or less before the course commencement date: there will be no refund of course fee.
13. The course fee is payable. - Less than 2 weeks but more than 3 working days before the course commencement date: 25% administration fee.
14. BCA cannot guarantee the availability of funding and subsidies for the course. Applicants are advised to check with the relevant professional accreditation bodies for information on available funding and subsidies.
15. BCA reserves the right to change and final approval of the relevant professional accreditation bodies.
16. BCA may use information, materials, services, intellectual property and other property and rights provided by BCA during the course are provided on an "as is" basis. BCA makes no warranties of any kind, either express or implied, as to any matter, and all such warranties, including warranties of merchantability and fitness for a particular purpose, are expressly disclaimed.
17. The Materials supplied to the company and individual applicant for the course ("Materials") are for their personal reference only and the company and individual applicant is not supposed to otherwise use the Materials. The company and individual applicant shall deliver and indemnify BCA and its officers, employees and agents from and against any and all liability, damages, losses or expenses (including reasonable attorneys' fees and expenses) imposed upon BCA in connection with any claim arising out of the company and individual applicant's use of the Materials. PLEASE NOTE: All correspondence and notices addressed to BCA are to be sent to BCA Academy.