

Dear Sir/Mdm

The School of Civil and Environmental Engineering is pleased to organize a two-day Short Course on **BLAST LOADING ON STRUCTURES**, from 16 Apr to 17 Apr 2026. The attachment has detailed information.

Short Course : **Blast Loading on Structures** [10 sessions]

Fee : \$900/ pax
[incl of GST] : \$800/ pax (NTU Alumni)

Date : 16 April to 17 April 2026 (Thu-Fri)

Time : 09:00 am to 05:30 pm (SG)

Venue : CEE Seminar Room A (N1-B1b-06)

Instructors : Prof TAN Kang Hai (NTU)
Prof YU Jun (Southeast University)

Please register by 01 April 2026. The payment details/link will be sent separately, after we have confirmed your registration. Please note that there is no refund of fees for cancellation.

Registration Link: <https://forms.cloud.microsoft/r/ddv45WrtzY>

QR Code for Registration:



Venue: CEE Seminar Room A (N1-B1b-06), Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 [Map](#)

Carparks nearer CEE Seminar Room A: Carpark A [Map](#), Carpark D [Map](#)

Thank you.

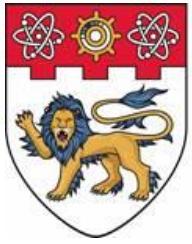
Regards

Regards

Prof TAN Kang Hai
Director
Protective Technology Research Centre (PTRC)

Assoc Prof WONG Yiik Diew
Director for Continuing Education and Training
School of CEE

School of Civil and Environmental Engineering (CEE)
Nanyang Technological University, Singapore



Two Day Short Course on Blast Loading on Structures: Design, Simulation Methods and Mitigation Strategies

The course is designed for practicing engineers and consultants, researchers and graduate students, and public-sector officers who are engaged in the analysis, testing, modelling, design, and assessment of structures under blast and impact loading. It provides comprehensive coverage of fundamental theory, material characterization, analytical solutions, numerical simulation methods, design procedures, and practical applications for enhancing structural resilience against blast and impact effects.

Date: 16-17 April 2026, Thursday-Friday

Time: 9:00am to 5:30pm

16-April	Thursday	17-April	Friday
09:00-10:00	Introduction to Blast Loading on Structures and Protection Concepts	09:00-10:00	Design of Reinforced Concrete Structures to Blast Loading Part I
10:00-10:15	Tea Break	10:00-10:15	Tea Break
10:15-12:15	Blast Load Idealization and Computation for Structural Design Part I	10:15-11:15	Design of Reinforced Concrete Structures to Blast Loading Part II
12:15-13:15	Lunch	11:15-11:45	Security By Design and Threat & Vulnerability Risk Assessment
13:15-15:15	Blast Load Idealization and Computation for Structural Design Part II	11:45-12:45	Lunch
15:15-15:30	Tea Break	12:45-13:45	Methods for modelling air blast load and case studies Part I
15:30-16:30	Structural Response to Blast Loading & PI Diagrams Part I	13:45-14:45	Methods for modelling air blast load and case studies Part II
16:30-17:30	Structural Response to Blast Loading & PI Diagrams Part II	14:45-15:00	Tea Break
	Tea Break	15:00-16:00	Design of Steel-Concrete-Steel Composite Structures to Blast Loading
	Energy Approach & Equivalent SDOF for Design Part I	16:00-17:00	Response of Structures to Near-Field Blast and Contact Detonation
	Energy Approach & Equivalent SDOF for Design Part II		

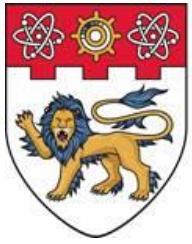
End of course

Venue: NTU-CEE Seminar Room A (N1-B1b-06), Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798

Abstract:

Impact, blast, and shock hazards present critical challenges in industrial safety, security, and defense, particularly for the protection of critical infrastructure and high-value assets. This two-day short course provides a structured overview of the fundamentals, analysis methods, and design strategies for mitigating blast and impact effects on structures. Key topics include blast load characterization and computation, blast simulation methods such as load blast enhanced (LBE), multi-material ALE (MM-ALE), and coupled LBE-ALE approaches, structural response and SDOF approaches, pressure-impulse (P-I) concepts, material characterization and strain-rate effects, and practical protective design methodologies. Delivered by leading experts, the course integrates focused lectures with real-world case studies and interactive discussions, enabling participants to develop practical competence in blast-resistant assessment and design. Participants will leave with actionable insights and a clear understanding of contemporary approaches and best practices in structural protection.

Registration Fee (with tea breaks & buffet lunch, fees inclusive of prevailing GST):



Two Day Short Course on Blast Loading on Structures: Design, Simulation Methods and Mitigation Strategies

Speaker 1: Prof. Tan Kang Hai

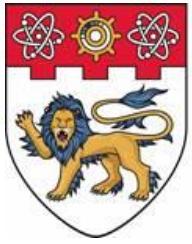


Prof. Tan Kang Hai is currently a professor at Nanyang Technological University and the director of Protective Technology Research Centre. Prof. Tan has published over 300 internationally renowned SCI journal papers with over 14000 citations. He has been ranked among the top 2% of global scientists at Stanford University for many consecutive years. Prof. Tan has high international reputation in the field of progressive collapse and fire resistance of structures, and won the Best Paper Award from SCI journal Structures in 2023 and the High Citation Research Award from the journal Engineering Structures. He serves on the editorial board of Cement and Concrete Composites, a premier journal in the field of cementitious materials and concrete technology. At the same time, he is also a registered professional engineer and expert-level engineer in the field of protection in Singapore. He has been awarded the Public Administration Medal (Bronze) and MND Medallion for service and contributions to the HDB Civil & Structural Engineering Advisory Panel. He is a member of the 17th Singapore Building Structure and Substructure Standards Committee and serves as the Chairman of Appeals Advisory Board for Infrastructure Protection Act. He has supervised over 50 PhD students to date, several of whom have received the Best PhD Thesis Award and other academic honors.

Speaker 2: Prof. Yu Jun



Prof. Yu Jun is currently working as a professor in School of Civil Engineering, Southeast University (SEU), Nanjing, China. He has been ranked among the top 2% of global scientists at Stanford University for many consecutive years. Prof. Yu has high international reputation in the field of progressive collapse of structures, and won the Best Paper Awards from the SCI journal Structures in 2023 and from the International Conference on Design & Analysis of Protective Structures (DAPS) in 2012. He was awarded “Distinguished Young Scholar Fund of Jiangsu Province” in 2018, and 3 grants from National Science Foundation of China. He served as a committee member in China to draft “Standard for anti-collapse design of building structures (T/CECS 392-2021)”, successfully organized 2024 China and Singapore International Conference on Applied Mechanics and Engineering (CSAME) and other two domestic academic conferences regarding disaster mitigation for civil structures. He is also a member of American Society of Civil Engineering (ASCE) and International Association of Protective Structures (IAPS).



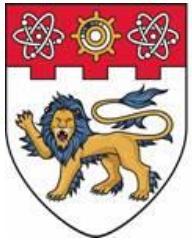
Two Day Short Course on

Blast Loading on Structures: Design, Simulation Methods and Mitigation Strategies

Day 1: Thursday, 16 April 2026

Time	Theme	Content	Speaker
09:00-10:00	Introduction to Blast Loading on Structures and Protection Concepts	<ul style="list-style-type: none">❖ Overview: the state-of-the-arts in protective technology❖ Protective plan & design for buildings/infrastructures❖ Mitigation of progressive collapse of a building	Prof. Tan Kang Hai
10:00-10:15 Tea Break			
10:15-12:15	Blast Load Idealization and Computation for Structural Design Part I & II	<ul style="list-style-type: none">❖ Incident blast pressure determination❖ Diffraction loading and Drag loading❖ Calculation of blast loads on building surface❖ Case studies❖ Blast parameter calculation examples❖ Blast wave loads for element design	Prof. Yu Jun
12:15-13:15 Lunch			
13:15-15:15	Structural Response to Blast Loading & P-I Diagrams Part I & II	<ul style="list-style-type: none">❖ Equation of motion under blast load❖ Resistance function of structural members❖ Concept of pressure-impulse diagram❖ Examples of P-I diagram for structure members under uniformly distributed blast load	Prof. Tan Kang Hai
15:15-15:30 Tea Break			
15:30-17:30	Energy Approach & Equivalent SDOF for Design Part I & II	<ul style="list-style-type: none">❖ Conversion of structural member to SDOF under blast load	

End of first day



Two Day Short Course on

Blast Loading on Structures: Design, Simulation Methods and Mitigation Strategies

Day 2: Friday, 17 April 2026

Time	Theme	Content	Speaker
09:00-10:00	Design of Reinforced Concrete Structures to Blast Loading Part I	<ul style="list-style-type: none"> ❖ Overview: the state-of-the-arts in protective technology ❖ Protective plan & design for buildings/infrastructures ❖ Mitigation of progressive collapse of a building 	Prof. Tan Kang Hai
10:00-10:15 Tea Break			
10:15-11:15	Design of Reinforced Concrete Structures to Blast Loading Part II	<ul style="list-style-type: none"> ❖ Blast pressure determination ❖ Calculation of blast loads on building surface ❖ Case studies ❖ Blast parameter calculation examples ❖ Blast wave loads for element design 	
11:15-11:45	Security By Design and Threat & Vulnerability Risk Assessment		
11:45-12:45 Lunch			
12:45-13:45	Methods for modelling air blast load and case studies Part I	<ul style="list-style-type: none"> ❖ Introduction of typical modelling methods ❖ LBE Method ❖ Multiple material ALE modelling for air blast load 	Prof. Yu Jun
13:45-14:45	Methods for modelling air blast load and case studies Part II	<ul style="list-style-type: none"> ❖ Examples of 3D ALE and 2D-to-3D Mapping methods ❖ Theory and Examples of Coupling of LBE and ALE methods ❖ Comparison of LBE, MM-ALE and coupling of LBE and MM-ALE 	
14:45-15:00 Tea Break			
15:00-16:00	Design of Steel-Concrete-Steel Composite Structures to Blast Loading	<ul style="list-style-type: none"> ❖ Strain rate effect of concrete and steel materials ❖ Connection types for steel-concrete-steel (SCS) composite structures ❖ Sectional capacity of Bi-steel SCS composite structures ❖ Design of SCS members against blast load 	
16:00-17:00	Response of Structures to Near-Field Blast and Contact Detonation	<ul style="list-style-type: none"> ❖ Typical experiment of structure members under near-field blast load ❖ A predictive model for damage sizes under contact detonation 	

End of course