Instructors
The course instructors have a wealth of experience in explosion effects, blast hazard assessment, structural dynamics and blast-resistant design. They are members of the Carleton Centre for Infrastructure Protection, Security, and Resilience (CIPSeR) and conduct experimental investigations of blast effects on critical infrastructure systems. They are also members of the CSA technical committee on blast resistant buildings.

Course Topics
Chemical explosives and explosions, blast load-structure interaction including blast loading of buildings, single-degree-of-freedom dynamics, blast-resistant design of reinforced concrete and structural steel structures, performance criteria for blast resistant structures in accordance with CSA 850-12.

Venue
The 2018 short course on “Blast-Resistant Structural Design” will be held in the Faculty Board Room, 2014 Minto Centre on the Campus of Carleton University—Canada’s Capital University.

Who Should Attend
The short course on blast-resistant structural design is designed for engineers and project managers in need of an understanding of explosion effects, blast resistant design, and building response to and performance under blast loading. Design professionals in the fields of blast protective design against terrorist threats or in the petrochemical (oil & gas) industries will find this course very useful. Architects, first responders, and building design/construction professionals will also benefit from this course, especially aspects of the new and first Canadian Standard on blast (CSA 850-12: Design and assessment of buildings subjected to blast loads).

Registration
Regular registration: $840.71 +13%HST ($109.29) $950.00
Parking for 2 days ( $17.70+ 13%HST($2.30) $20.00
Total Payment $  

Registration at the door: $1106.20 +13%HST ($143.80) $1250.00

For online registration visit blast-resistant-structural-design
If you would like to register with money order or bank draft complete the payment form below and mail to the address provided. Indicate “2018 Blast Course” on draft.

Payment method:
☐ Cheque ☐ Money order ☐ Bank draft

Name:
Address:
Email Address:

Make cheques payable to Carleton University and mail to:
Civil and Environmental Engineering
3432 Mackenzie Building,
1125 Colonel By Drive
Ottawa, Ontario
K1S 5B6

Accommodation
For accommodation information visit www.carleton.ca/conferenceservices/ www.ottawahotels.com

http://www.carleton.ca/elerg/
Thursday May 10, 2018
0730 – 0830 Arrival/Registration
0830 – 1000 Session 1A
Housekeeping
Introduction to blast-resistant design
Stand-off distance vs. Explosive charge mass
Blast threat risk assessment
Overview of CSA 850-12
1000 – 1030 Coffee Break
1030 – 1200 Session 1B
Chemical explosives, classification, initiation, TNT-equivalence, explosion effects, blast load categories, incident and reflected blast, blast wave parameters calculation
1200 – 1300 Lunch Break
1300 – 1460 Session 1C
Blast load-structure interaction: Contact/Near contact, close-in and far-field loading
Front face loading, blast clearing, stagnation pressure
Side wall and roof loading, back face loading, net loading on structure
1430 – 1500 Coffee Break
1500 – 1630 Session 1D
Single-degree-of-freedom analysis of structures: D’Alambert’s principle, dynamic equation of motion, free and forced vibration, harmonic forced vibration, forced vibration to generalized loading, Duhamel integral, response to triangular loading (blast load)
1630 – 1700 Hands on exercise

Friday May 11, 2018
0730 – 0830 Arrival/Registration
0830 – 1000 Session 2A
Equivalent SDOF analysis of structural elements, SDOF analysis of nonlinear systems, pressure-impulse diagrams for elastic system and elasto-plastic systems
1000 – 1030 Coffee Break
1030 – 1200 Session 2B
Design and analysis of reinforced concrete elements subjected to blast loading:
Concrete and steel reinforcement behaviour under high strain rates (DIF), Reinforced concrete section properties, Resistance function, Response limits
1200 – 1300 Lunch Break
1300 – 1430 Session 2C
Design and analysis of structural steel elements subjected to blast loading:
Structural steel behaviour under high strain rates (DIF)
Structural steel section properties
Resistance function
Response limits
1430 – 1500 Coffee Break
1500 – 1630 Session 2D
Performance criteria, building level of performance, and response limits for structural members in accordance with CSA 850-12
1630–1700 Hands on exercise