Carleton University  
Department of Civil and Environmental Engineering 

CIVE 5707 / IPIS 5507 – Blast Load Effects on Structures  
Fall 2011 

Course Instructor: Dr. Abass Braimah  

*WebCT will be used for communication and dissemination of course materials.* 

Office: Minto Centre 2038  

Office Hours: Open door policy; when my door is open you are welcome  

Prerequisites: Reinforced Concrete Design, Structural Steel Design, and Dynamics of Structures  

Lectures: Lectures will be held weekly on Tuesday; 6:05 P.M. – 8:55 P.M. in UC 282  

Course Objectives:  
The primary objective of this course is to introduce students to the blast load (explosive) effects on infrastructures. Among other things the course will introduce:  
✓ Blast risk and vulnerability assessment. 
✓ Blast load determination and design of structural components subjected to blast loading.  
✓ Blast mitigation and retrofit design.  

It is expected that this course will bring into the mainstream blast hazards associated with explosions, be they accidental or man-made (e.g. terrorist attacks), and the methods available to mitigate their effects on civil engineering infrastructure.  

Recommended Texts: Lecture Notes and Referenced texts.  

Course Outline  

- Threat and Risk Analysis  
- Introduction to Explosives  
- Blast Load Effects  
- Blast Load on Structures  
- Behaviour of Structural Elements under Blast Loads  
- Structural Analysis and Design for Blast Loads  
- Blast Mitigation and Retrofit of Structures  
- Post-Event Assessment of Structures  
- Review  

Wk 1  
Wk 2  
Wk 3,4  
Wk 5  
Wk 6  
Wk 7,8,9, 10  
Wk 11  
Wk 12  
Wk 13
Marking Scheme:

Assignments: 4 (10% each) 40%
Final Examination 40%
Project 20%
100%

Examination:

The final examination will be open book. Examinations will be picked up at 9:00 am and returned at 4:30 pm. More information on the final examination will be provided during the term.

Auditing Students

Auditing students are not required to complete assignments nor project but for a successful audit the student must attend at least 75% of lectures (10 of 13 lectures).

Reference Texts


http://www.princeton.edu/~globsec/publications/effects/effects.shtml

http://www.ddesb.pentagon.mil/tm51300.htm

Academic Accommodation:

You may need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations. Please review the course outline promptly and write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

It takes time to review and consider each request individually, and to arrange for accommodations where appropriate. Please make sure you respect these timelines particularly for in-class tests, mid-terms and final exams, as well as any change in due dates for papers.

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://carleton.ca/equity/accommodation