

Civ E 374 – Structural Design I (Fall Term, 2014)

Instructor: Dr. Carlos Cruz-Noguez (cruznogu@ualberta.ca)
Office: NRE 3-021
Office hours: TBD, or by appointment

Schedule:

Lecture B1	M, W, F	08:00 – 08:50	TBD
Labs H1 and H2	M and W	14:00 – 16:50	TBD

Recommended Readings:

Class Notes in eClass: Download and print the class notes before each class (follow the eClass modules in the course website).

Textbooks: Kulak and Grondin (2010) “Limit States Design in Structural Steel” *Canadian Institute of Steel Construction*, 9th Edition.

Reinforced Concrete, Mechanics and Design, 1st Canadian Edition, MacGregor, J.G and Bartlett, F.M., Prentice Hall, 2000.

Handbooks: Canadian Institute of Steel Construction (2010) “Handbook of Steel Construction”, 10th Edition. This book also contains the governing design standard for the design of steel structures in Canada, CAN/CSA S16-09.

Cement Association of Canada (2006) “Concrete Design Handbook” *Cement Association of Canada*, 3rd Edition (This book also contains the governing design standard for the design of reinforced concrete structures in Canada, CAN/CSA A23.3-04)

Important: Purchasing the handbooks and the textbooks is not mandatory for this course. However, is highly recommended you obtain your own copies for further reference or to complete the assignments. In the case of the midterm examination, if a chart, table, or figure from the handbook is required, the instructor will provide it with the exam booklet.

Outline:

1. Introduction, Framing Systems, Limit States Design
2. Properties of Structural Steel, Steel Shapes, Fabrication
3. Steel Tension Members – Design Requirements, Net Section, Shear Lag
4. Steel Compression Members – Member Behaviour, Design Procedures
5. Steel Beams – Design for Flexure and for Shear, Laterally Unbraced Beams, Deflections
7. Simple Connections – Structural Fasteners, Simple Framing Connections
8. Properties of Concrete and Steel Reinforcement
9. Flexural Behaviour of Rectangular Reinforced Concrete Beams
10. Flexural Design of Reinforced Concrete Beams – Rectangular Beams, T-Beams
11. Shear Behaviour and Design of Reinforced Concrete Beams
12. Bond, Development Length, Anchorage, and Bar Cut-Off
13. Behaviour and Design of Short Reinforced Concrete Compression Members

Mark Distribution:	Laboratory and Homework Assignments	20%
	Mid-Term Examination	80%

Examination: Mid-Term: TBD. Time: TBD. It covers topics 1-7.

Final examination: TBD. Time: TBD. It covers topics 8-13.

Note: Both the mid-term and final examinations are open book. Class notes, lab and assignment solutions and reference materials are allowed in the exams. Electronic devices with transmission capability are not allowed.

Code of conduct: Cell phones, tablets and laptops with content other than the electronic lectures *must be off* during lectures. Assignments should look professional and must be done in engineering paper: illegible work will not be graded nor marked. There is a zero-tolerance policy for late arrivals (more than 10 min) during lectures: *you will be asked to leave*.