

CIV498 Design Project 2018

Project Area: STRUCTURAL ENGINEERING DESIGN

Project Title: STRUCTURAL DESIGN CONCEPTS, LARGE SPORTS STADIUM

INSTRUCTOR: Chris Andrews P. Eng. Email to be confirmed

STUDIO SUMMARY:

Studio Summary

Large sports stadium facilities present compelling structural design challenges and offer unique opportunities for creative and innovative structural design solutions. Stadium design is evolving with emerging technologies shaping design through new materials, energy modelling, building operating systems, large data, modelling tools and connected multi-discipline design processes. The scale of large sports stadiums in urban locations requires consideration of engineering, architectural, urban planning and financial considerations.

The design problem covers the structural design of a covered 55,000 seat multi-purpose sports facility located in Toronto, Ontario near the Toronto Harbour. The focus will be on developing conceptual structural design solutions for primary structures including long-span roof structures, vertical and lateral load-resisting elements and foundation structures. Design concepts will be validated with design drawings, calculations, images and model work.

The studio will include lectures, working sessions, group presentations, field visits and guest presentations. Lectures will include topics covering the structural design process, current design considerations of sports stadiums, cost considerations, code basis and specialized wind-snow model studies, geometrical considerations, structural design drawings, materials and modelling tools, construction logistics.

The project will require organizational, planning, presentation and team management skills in addition to knowledge from earlier civil engineering course work.

The course will provide students with the opportunity to gain experience with the structural design process of a complete building system, professional engineering design practice and standards, presentation and communication skills and specialized knowledge related to stadium design.

DELIVERABLES:

1. Defining the Project: project statement, team structure, delivery plan.
2. Design Brief: project design parameters, code basis,
3. Initial Concepts: sketches, drawings, images, design process.
4. Interim Presentation: Feasibility basis.
5. Final Report.
6. Final Presentation.

GRADING: *(please note that the grading breakdown will be consistent among all design project sections)*

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| Studio Session Participation: | 10% |
| Interim Deliverables (report, memos...etc.) : | 30% |
| Interim Presentation: | 10% |
| Final Report: | 40% |
| <u>Final Presentation:</u> | <u>10%</u> |
| | 100% |
