Civil Engineering - Joint (CIVJ)

Civil Engineering - Joint (CIVJ) Courses
CIVJ 5000 [0.5 credit] (CVG 5100)
Deep Foundations
CIVJ 5003 [0.5 credit]
Dam Engineering
CIVJ 5005 [0.5 credit]
Adsorption Separation Process
CIVJ 5006 [0.5 credit] (CVG 5106)
Site Improvements
CIVJ 5008 [0.5 credit] (CVG 5108)
Pile Dynamics
CIVJ 5102 [0.5 credit]
Behaviour of Soil and Rock
CIVJ 5104 [0.5 credit]
Soil Plasticity
CIVJ 5105 [0.5 credit] (CVG 5175)
Numerical Methods for Geotechnical Engineering
CIVJ 5106 [0.5 credit] (CVG 5161)
Mechanics of Unsaturated Soils
CIVJ 5107 [0.5 credit] (CVG 5177)
Offshore Geotechnique
CIVJ 5108 [0.5 credit] (CVG 5178)
Ice Mechanics
CIVJ 5109 [0.5 credit] (CVG 5109)
Geotechnical Hazards
CIVJ 5110 [0.5 credit] (CVG 5187)
Rock Mechanics
Rock exploration, laboratory and in-situ testing, rock mass
classification, deformation and strength, failure criteria,
stresses in rock, foundations on rock.
CIVJ 5182 [0.5 credit] (CVG 5182)
Water Resources Management
Global water supply and demand, integrated water
resources management, modeling and optimization
of water resources systems, reservoir management,
uncertainty modeling, climate change and water, decision
under uncertainty.
Also listed as ENVJ 5182.

CIVJ 5184 [0.5 credit] (CVG 5184)
Construction Cost Estimating
General overview of construction cost estimating.
Techniques and construction cost estimating process;
elements of project cost; conceptual and detailed
cost estimation methods; risk assessment and range
estimating; work breakdown structure applied in building
projects. Computer applications in building construction
cost estimating and infrastructure projects.

CIVJ 5185 [0.5 credit] (CVG 5185)
Construction Life Cycle Analysis
General overview of analyzing the economics of
construction projects by applying the concept of time
value of money. Financing strategies for construction
projects and profitability analysis; correlation between
value engineering, life cycle cost analysis and assessment
for construction projects. Breakeven, sensitivity and risk
analysis.

CIVJ 5186 [0.5 credit] (CVG 5186)
Project Information Management
Topics in contractual relationships between construction
project teams. Different type of construction contracts
and their application. Preparation of project documents.
Evaluation of different types of project organization
structure and associated project delivery systems. Bidding
strategies. Network analysis using deterministic and
stochastic methods for construction-time.

CIVJ 5188 [0.5 credit] (CVG 5188)
Loads on structures
Overview of loads on buildings according to Canadian
codes and standards. Dead and live loads, snow loads,
wind loads, earthquake loads, loads on non-structural
components; vibrations. Selected topics in the practical
design of building structures.

CIVJ 5189 [0.5 credit] (CVG5189)
Blast Engineering
Overview of explosives and blast loads on structural
and non-structural infrastructure components; dynamic
analysis of elements under blast-induced shock waves
and dynamic pressures; elastic and inelastic response;
incremental equation of motion and nonlinear analysis;
development of resistance functions; pressure-impulse (P-
I) diagrams; blast-resistant building design.

CIVJ 5190 [0.5 credit] (CVG 5190)
Rehabilitation of Concrete Structures
Durability of concrete bridges and building structures in
Canada; assessment and evaluation of damaged concrete
structures; repair, rehabilitation and strengthening
techniques; applicable design codes and guidelines;
monitoring technologies for structures; implications for
infrastructure management.
Lecture three hours a week
CIVJ 5191 [0.5 credit] (CVG 5191)
Diagnosis and Prognosis of Concrete Infrastructure
Condition assessment of concrete infrastructure using experimental (i.e. visual, nondestructive, microscopic and mechanical) and analytical approaches; overview of repair and maintenance techniques according to damage type and extent; Serviceability performance and appraisal guides for aging infrastructure; design for durability through performance based design approaches. Lecture three hours a week

CIVJ 5192 [0.5 credit] (CVG 5192)
Characterization Methods for Materials
Modern materials characterization techniques especially with respect to civil engineering materials. Choosing the right characterization methods in order to determine the properties of materials such as chemical composition, atomic structure, and surface properties used in their research. Interpreting the results of each method.

CIVJ 5193 [0.5 credit] (CVG 5193)
Instrumentation and Experimental Design for Civil Engineering
Introduction to instrumentation in civil engineering applications. Instrument types and performance, strain gauges, transducers, measurement of position, velocity, acceleration, force, pressure, temperature and flow. Data collection and data acquisition systems; diagnostics and calibration, closed versus open-loop control; servomotor types and servo-valves.

CIVJ 5201 [0.5 credit] (CVG 5142)
Advanced Structural Dynamics

CIVJ 5202 [0.5 credit] (CVG 5143)
Advanced Structural Steel Design

CIVJ 5203 [0.5 credit] (CVG 5145)
Theory of Elasticity

CIVJ 5204 [0.5 credit] (CVG 5147)
Theory of Plates and Shells

CIVJ 5206 [0.5 credit] (CVG 5150)
Advanced Concrete Technology

CIVJ 5209 [0.5 credit] (CVG 5153)
Wind Engineering

CIVJ 5300 [0.5 credit] (CVG 5144)
Advanced Reinforced Concrete Design

CIVJ 5301 [0.5 credit] (CVG 5156)
Finite Element Methods I

CIVJ 5302 [0.5 credit] (CVG 5146)
Numerical Methods of Structural Analysis

CIVJ 5303 [0.5 credit] (CVG 5157)
Finite Element Methods II

CIVJ 5304 [0.5 credit] (CVG 5149)
Structural Stability

CIVJ 5305 [0.5 credit] (CVG 5148)
Prestressed Concrete Design

CIVJ 5306 [0.5 credit] (CVG 5155)
Earthquake Engineering

CIVJ 5307 [0.5 credit] (CVG 5158)
Elements of Bridge Engineering

CIVJ 5308 [0.5 credit] (CVG 5154)
Random Vibrations

CIVJ 5309 [0.5 credit] (CVG 5159)
Long Span Structures
Includes: Experiential Learning Activity

CIVJ 5310 [0.5 credit] (CVG 5311)
Bridge Design

CIVJ 5311 [0.5 credit] (CVG 5312)
Durability of Concrete Structures

CIVJ 5312 [0.5 credit] (CVG 5313)
Seismic Analysis and Design of Concrete Structures
Includes: Experiential Learning Activity

CIVJ 5500 [0.5 credit]
Deep Foundations

CIVJ 5501 [0.5 credit] (CVG 5111)
Hydraulic Structures

CIVJ 5502 [0.5 credit] (CVG 5112)
Computational Hydrodynamics

CIVJ 5503 [0.5 credit] (CVG 5160)
Sediment Transport

CIVJ 5504 [0.5 credit] (CVG 5162)
River Hydraulics

CIVJ 5506 [0.5 credit] (CVG 5120)
Water Resources Systems
Includes: Experiential Learning Activity

CIVJ 5508 [0.5 credit]
Groundwater and Seepage

CIVJ 5509 [0.5 credit] (CVG 5123)
Advanced Topics in Hydrology

CIVJ 5601 [0.5 credit] (EVG 5125)
Statistical Methods in Hydrology

CIVJ 5602 [0.5 credit] (CVG 5126)
Stochastic Hydrology

CIVJ 5603 [0.5 credit] (CVG 5127)
Hydrologic Systems Analysis

CIVJ 5604 [0.5 credit] (CVG 5128)
Water Resources Planning and Policy
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<td>Irrigation and Drainage</td>
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