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.

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] (CVG 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

CIVJ 5605 [0.5 credit] (CVG 5124)
Coastal Engineering

CIVJ 5606 [0.5 credit] (CVG 5131)
River Engineering

CIVJ 5607 [0.5 credit]
Irrigation and Drainage

CIVJ 5803 [0.5 credit] (CVG 5119)
Computational Hydraulics

CIVJ 5901 [0.5 credit]
Unit Op of Water Treatment

CIVJ 5904 [0.5 credit]
Water and Wastewater Labs

CIVJ 5905 [0.5 credit]
Water and Wastewater Proc

CIVJ 5906 [0.5 credit]
Solid Waste Disposal

CIVJ 5907 [0.5 credit]
Chemistry of Enviro Engin

CIVJ 6000 [0.5 credit] (CVG 6300)
Special Topics in Civil Engineering

CIVJ 6001 [0.5 credit] (CVG 6301)
Special Topics in Civil Engineering

CIVJ 6002 [0.5 credit] (CVG 6302)
Special Topics in Civil Engineering

CIVJ 6003 [0.5 credit] (CVG 6303)
Special Topics in Civil Engineering

CIVJ 6004 [0.5 credit] (CVG 6304)
Special Topics in Civil Engineering

CIVJ 6005 [0.5 credit] (CVG 6305)
Special Topics in Civil Engineering

CIVJ 6006 [0.5 credit] (CVG 6306)
Special Topics in Civil Engineering

CIVJ 6007 [0.5 credit] (CVG 6307)
Special Topics in Civil Engineering

CIVJ 6008 [0.5 credit] (CVG 6308)
Special Topics in Civil Engineering

CIVJ 6009 [0.5 credit] (CVG 6309)
Special Topics in Civil Engineering

CIVJ 6010 [0.5 credit] (CVG 6310)
Special Topics in Civil Engineering

CIVJ 6011 [0.5 credit] (CVG 6311)
Special Topics in Civil Engineering

CIVJ 6012 [0.5 credit] (CVG 6312)
Special Topics in Civil Engineering

CIVJ 6013 [0.5 credit] (CVG 6313)
Special Topics in Civil Engineering

CIVJ 6014 [0.5 credit] (CVG 6314)
Special Topics in Civil Engineering

CIVJ 6015 [0.5 credit] (CVG 6315)
Special Topics in Civil Engineering

CIVJ 6016 [0.5 credit] (CVG 6316)
Special Topics in Civil Engineering

CIVJ 6017 [0.5 credit] (CVG 6317)
Special Topics in Civil Engineering

CIVJ 6018 [0.5 credit] (CVG 6318)
Special Topics in Civil Engineering

CIVJ 6019 [0.5 credit] (CVG 6019)
Special Topics in Civil Engineering

CIVJ 6020 [0.5 credit] (CVG 6320)
Special Topics in Civil Engineering