Civil Engineering in Memorial University of Newfoundland

The full-time 141 credit hour Bachelor of Engineering (Co-operative), Civil Engineering Major, requires eight academic terms and four work terms.

The 141 credit hours shall normally be taken in the academic terms and order as set out in [Civil Engineering Major](https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/6/1/#d.en.328532).

Civil Engineering courses are identified by a four-digit numbering system, the first two digits signifying the following:

The first digit denotes the academic term during which the course is normally offered.

The second digit denotes the primary areas of study, namely:

| 0: Capstone courses |
| --- |
| 1: Hydrotechnical & Water Resources |
| 2: Geotechnical courses |
| 3: Mechanics & Structural Analysis |
| 4: Mathematics and Science |
| 5: Design and Civil cross-disciplinary courses |
| 6: Environmental courses |
| 7: Highways and Construction Materials |
| 8: Construction |
| 9: Special Topics |

Civil Engineering courses are designated by CIV.

Non-departmental Engineering courses are designated by ENGI.

\*\*Engineering One Term\*\* -

- Required Courses:

1. Chemistry 1050 or 1200

2. 3 credit hours in English at the 1000 level or any Critical Reading and Writing course

3. Mathematics 1000, 1001, 2050

4. Physics 1050, 1051

5. ENGI 1010, 1020, 1030, 1040

- Elective Courses:

- Students who are expecting to successfully complete the Engineering One requirements by the end of the Winter semester may apply to undertake a work term during the Spring semester. In this case, the prerequisite course ENGI 200W is expected to be successfully completed during the Fall semester. All other students are expected to successfully complete ENGI 200W in the Winter semester of Engineering One.

- In addition to meeting the requirements outlined below, a student must successfully complete four Complementary Studies courses as described under Description of Program, Complementary Studies.

\*\*Fall - Academic Term 3\*\* -

- Required Courses:

1. CIV 3210, 3440, 3710, 3720

- Elective Courses:

1. ENGI 3101

2. ME 3301

\*\*Winter\*\* -

- Required Courses:

1. ENGI 001W or 002W

\*\*Spring - Academic Term 4\*\* -

- Required Courses:

1. CIV 4220, 4310, 4450, 4610

- Elective Courses:

1. ENGI 4421

\*\*Fall\*\* -

- Required Courses:

1. ENGI 001W or 002W or 003W

\*\*Winter - Academic Term 5\*\* -

- Required Courses:

1. CIV 5110, 5230, 5320, 5460, 5510

\*\*Spring\*\* -

- Required Courses:

1. ENGI 002W or 003W or 004W

\*\*Fall - Academic Term 6\*\* -

- Required Courses:

1. CIV 6120, 6330, 6470, 6520, 6810

\*\*Winter\*\* -

- Required Courses:

1. ENGI 003W or 004W or 005W (optional)

\*\*Spring - Academic Term 7\*\* -

- Required Courses:

1. CIV 7130, 7530, 7730

2. 6 credit hours from: CIV 7140, 7240, 7340, 7540, 7620, 7820 or other courses as specified by the Head of the Department of Civil Engineering

\*\*Fall\*\* -

- Required Courses:

1. ENGI 004W or 005W (optional) or 006W (optional)

\*\*Winter - Academic Term 8\*\* -

- Required Courses:

1. CIV 8000, 8830

- Elective Courses:

1. ENGI 8152

2. 9 credit hours from: CIV 8150, 8550, 8560, 8570, 8630 or other courses as specified by the Head of the Department of Civil Engineering

\*\*Course Title:\*\* CIV 3210 Earth Sciences for Civil Engineering

\*\*Course Information:\*\* CIV 3210 is an introduction to basic concepts in geology with emphasis on applications in Civil, Geological, Mining, and Environmental Engineering through the study of basic concepts and case histories. It includes the study of rocks, minerals, sediments, and their physical properties in laboratory exercises.

\*\*EQ:\*\* the former ENGI 3610

\*\*LH:\*\* 3

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303835>

\*\*Course Title:\*\* CIV 3440 Mathematics for Civil Engineering I

\*\*Course Information:\*\* CIV 3440 includes functions of a single parameter, conic sections, polar coordinates, partial differentiation, multiple integrals, sequences & series, and an introduction to first-order ordinary differential equations.

\*\*EQ:\*\* the former ENGI 3425

\*\*OR:\*\* tutorial 1 hour per week

\*\*PR:\*\* Mathematics 1001 and 2050

\*\*Course Link:\*\*<https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303851>

\*\*Course Title:\*\* CIV 3710 Surveying and Geomatics

\*\*Course Information:\*\* CIV 3710 includes distance, elevation, and angle measurements; horizontal curves; plane survey calculations; area and volume computations; introduction to photogrammetry; global positioning (GPS) and geographical information systems (GIS). A surveying field school to introduce students to the use of surveying equipment and mapping will be held in the first two weeks of the term.

\*\*EQ:\*\* the former ENGI 3703

\*\*LH:\*\* nine 3-hour sessions per semester

\*\*OR:\*\* 18 hours of field school which occurs in the first two weeks of the semester

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303838>

\*\*Course Title:\*\* CIV 3720 Materials for Construction

\*\*Course Information:\*\* CIV 3720 includes the structure of metals and nonmetals; deformation of metals; strengthening mechanisms in metals; concrete and cementitious materials; admixtures; iron and steel; brick masonry; concrete masonry; mortar grout and plaster; wood and wood products.

\*\*EQ:\*\* the former ENGI 3731

\*\*LH:\*\* nine 3-hour sessions per semester

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303831>

\*\*Course Title:\*\* CIV 4220 Geotechnical Engineering I

\*\*Course Information:\*\* CIV 4220 includes an introduction to soil as a three-phase material and examines physical and mechanical properties; particle size distribution; soil plasticity and structure; classification of soils; soil compaction; hydraulic properties; permeability; flow of water in soil; flownets; effective stress concept in soils; stresses in soils beneath loaded areas; and one-dimensional consolidation theory.

\*\*EQ:\*\* the former ENGI 4723

\*\*LH:\*\* 3

\*\*OR:\*\* twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 3210 or the former ENGI 3610

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303833>

\*\*Course Title:\*\* CIV 4310 Mechanics of Solids I

\*\*Course Information:\*\* CIV 4310 examines force analysis of structures and structural components, free body diagrams of structure, components, and section of a component, definition of stress at point, stress notation, complementary property of shear stress, definition of strain, normal strain, shear strain, thermal strain, mechanical properties of materials, analysis of prismatic members due to axial, bending, and torsion loading, analysis of beams, shear force, and bending moment diagrams, combined loads; and the transformation of stresses and strains.

\*\*CR:\*\* ME 4601, the former ENGI 4934

\*\*EQ:\*\* the former ENGI 4312

\*\*LH:\*\* four 1-hour sessions per semester up to ten 1-hour tutorials per semester

\*\*PR:\*\* ENGI 1010

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303827>

\*\*Course Title:\*\* CIV 4450 Mathematics for Civil Engineering II

\*\*Course Information:\*\* CIV 4450 examines the analytical solutions of ordinary differential equations of the first and higher orders and numerical methods: errors, round off and stability, solution to nonlinear equations, curve fitting and interpolation methods, numerical differentiation and integration.

\*\*CR:\*\* the former ENGI 4422

\*\*EQ:\*\* the former ENGI 4425

\*\*OR:\*\* tutorial 1 hour per week

\*\*PR:\*\* CIV 3440 or the former ENGI 3425

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303837>

\*\*Course Title:\*\* CIV 4610 Applied Environmental Science and Engineering

\*\*Course Information:\*\* CIV 4610 examines the nature and scope of environmental problems; concept of sustainable development; basic concepts of environmental quality parameters and standards; water and wastewater treatment; solid and hazardous wastes; atmospheric, water, and noise pollution, their measurements, and mitigation control.

\*\*EQ:\*\* the former ENGI 4717

\*\*LH:\*\* six 3-hour sessions per semester

\*\*OR:\*\* two 3-hour tutorials per semester

\*\*PR:\*\* Chemistry 1050 or Chemistry 1200, CIV 3210 or the former ENGI 3610

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303834>

\*\*Course Title:\*\* CIV 5110 Fluid Mechanics

\*\*Course Information:\*\* CIV 5110 examines fluid properties; fluid statics; buoyancy and stability; kinematics; pressure measurement; continuity, energy, and momentum principles; control volume analysis; energy and hydraulic grade lines; free jets; laminar and turbulent flow; dimensional analysis; drag on immersed bodies; flow measurement; head loss in pipes; and an introduction to flow in pipe systems.

\*\*CR:\*\* ME 4501, the former ENGI 4913, the former ENGI 4961, the former ENGI 5961

\*\*EQ:\*\* the former ENGI 5713

\*\*LH:\*\* five 2-hour sessions per semester

\*\*OR:\*\* twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 4450 or the former ENGI 4425

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303844>)

\*\*Course Title:\*\* CIV 5230 Geotechnical Engineering II

\*\*Course Information:\*\* CIV 5230 examines shear strength of soil; types of laboratory and in-situ soil shear strength tests; lateral earth pressure on retaining structures; slope stability analysis; soil bearing capacity for shallow foundations; introduction to pile foundations and limit state design in geotechnical engineering.

\*\*CR:\*\* the former ENGI 6723

\*\*EQ:\*\* the former ENGI 5723

\*\*LH:\*\* 3

\*\*OR:\*\* twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 4220 or the former ENGI 4723

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303817>

\*\*Course Title:\*\* CIV 5320 Mechanics of Solids II

\*\*Course Information:\*\* CIV 5320 includes a review of earlier concepts; strain transformation; failure theories; deflections of beams; energy methods; buckling of columns and the inelastic behavior of beam cross-sections.

\*\*EQ:\*\* the former ENGI 5312

\*\*LH:\*\* four 3-hour sessions per semester OR twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 4310 or the former ENGI 4312

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303824>

\*\*Course Title:\*\* CIV 5460 Applied Mathematical Analysis

\*\*Course Information:\*\* CIV 5460 examines numerical and analytical solutions of applied mathematical problems in Civil Engineering, problems with higher-order ordinary differential equations, stiff equations, systems of ODE, Runge-Kutta methods, boundary value problems, applications of eigenvalue problems (numerical solutions), Fourier analysis, elliptic, parabolic and hyperbolic partial differential equations and their numerical solutions with engineering applications.

\*\*EQ:\*\* the former ENGI 5434

\*\*PR:\*\* CIV 4450 or the former ENGI 4425

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303832>

\*\*Course Title:\*\* CIV 5510 Design of Concrete Structures

\*\*Course Information:\*\* CIV 5510 begins with a review of the mechanical properties of concrete. Topics include design methods and requirements, strength of reinforced concrete sections in bending, balanced condition at ultimate strength with tension reinforcement, bending with both tension and compression reinforcement; serviceability, deflections, flexural crack control for beams and one-way slabs; shear strength, inclined cracking, and shear reinforcement; bond stress and development of reinforcement; members in compression and bending; short columns.

\*\*EQ:\*\* the former ENGI 5706

\*\*LH:\*\* five 3-hour sessions per semester OR twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 4310 or the former ENGI 4312

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303815>

\*\*Course Title:\*\* CIV 6120 Hydraulics

\*\*Course Information:\*\* CIV 6120 examines flow in pipe systems and networks; uniform and non-uniform flow in open channels; hydraulic machinery and associated conduits; design and analysis of culverts; and pipeline/pump system optimization.

\*\*EQ:\*\* the former ENGI 6713

\*\*LH:\*\* four 3-hour sessions per semester

\*\*PR:\*\* ENGI 4102, CIV 5110 or the former ENGI 5713

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303843>

\*\*Course Title:\*\* CIV 6330 Structural Analysis I

\*\*Course Information:\*\* CIV 6330 examines structure classification and loads, building code provisions, the analysis of statically determinate frames, arches, and cables, stability and determinacy of planar structures, shear and moment diagrams for frames, influence lines for statically determinate structures, the force method of analyzing indeterminate structures, the slope deflection method, and moment distribution method.

\*\*EQ:\*\* the former ENGI 6705

\*\*LH:\*\* six 3-hour sessions per semester OR twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 5320 or the former ENGI 5312

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303845>

\*\*Course Title:\*\* CIV 6470 Thermal Sciences

\*\*Course Information:\*\* CIV 6470 examines fundamental concepts associated with thermodynamics, fluid dynamics, and heat transfer; the first and second laws of thermodynamics; system and control volume analysis; classification of flows; introduction to boundary layers and drag; convection, conduction, and radiation heat transfer; thermal insulation and calculation of R-values; and cooling of electrical components.

\*\*CR:\*\* the former ENGI 4322

\*\*EQ:\*\* the former ENGI 6322

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303842>

\*\*Course Title:\*\* CIV 6520 Design of Concrete and Masonry Structures

\*\*Course Information:\*\* CIV 6520 examines the design of slender columns, design methods for reinforced concrete two-way slabs, two-way slabs supported on walls and stiff beams, direct design method, design of foundation systems, footing design, design of concrete retaining walls, engineered masonry, mortar stress, analysis and design of flexural members, axial load and bending in unreinforced and reinforced walls.

\*\*EQ:\*\* the former ENGI 6707

\*\*LH:\*\* 2 OR twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 5510 or the former ENGI 5706

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303820>

\*\*Course Title:\*\* CIV 6810 Construction Planning Equipment and Methods

\*\*Course Information:\*\* CIV 6810 includes construction equipment selection and utilization; earthmoving including the use of explosives; case studies of major civil projects; principles of project planning and control; computer applications to the construction industry.

\*\*CR:\*\* the former ENGI 8749

\*\*EQ:\*\* the former ENGI 6749

\*\*PR:\*\* ENGI 4102, completion of Academic Term 5 of the Civil Engineering program

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303850>

\*\*Course Title:\*\* CIV 7130 Hydrology and Water Resources

\*\*Course Information:\*\* CIV 7130 examines basic hydrometeorological processes, evapotranspiration, precipitation, intensity-duration-frequency (IDF) analysis and development, snowmelt, infiltration, runoff, and streamflow; statistical treatment of hydrologic data; hydrograph analysis and synthesis; design storms and design floods; reservoir storage and flood routing; urban run-off and drainage; use of hydrologic modeling software.

\*\*EQ:\*\* the former ENGI 7713

\*\*LH:\*\* four 2-hour sessions per semester

\*\*PR:\*\* CIV 5110 or the former ENGI 5713

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303840>

\*\*Course Title:\*\* CIV 7140 Hydrotechnical Engineering

\*\*Course Information:\*\* CIV 7140 examines the theory and application of steady gradually-varied flow in artificial and natural open channels together with an introduction to appropriate software; erosion protection and mobile-boundary hydraulics; problems with ice in rivers, the design of spillways, energy dissipaters, and culverts. There is an introduction to water hammer and surge tanks.

\*\*EQ:\*\* the former ENGI 7716

\*\*LH:\*\* four 3-hour sessions per semester

\*\*PR:\*\* CIV 6120 or the former ENGI 6713

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303829>

\*\*Course Title:\*\* CIV 7240 Geotechnical Engineering III

\*\*Course Information:\*\* CIV 7240 examines geotechnical engineering analysis and design methods; subsurface investigation; limit state design of shallow foundations and mat foundations in soil and rock; foundations in cold regions; design of axially and laterally loaded piles; and flexible retaining structures (sheet piles).

\*\*EQ:\*\* the former ENGI 7723

\*\*PR:\*\* CIV 5230 or the former ENGI 5723

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303819>

\*\*Course Title:\*\* CIV 7340 Finite Element Structural Analysis

\*\*Course Information:\*\* CIV 7340 includes a review of basic concepts required for FEA, basics of stiffness formulation, direct stiffness method, displacement method, one-dimensional elements, trusses and frames. Topics include 1-D fluid and heat transfer elements, automated analysis and modeling concepts, higher-order elements, two-dimensional elements - plane stress and plane strain, introduction to 3D and other types. - introduction to advanced topics and isoparametric formulation.

\*\*EQ:\*\* the former ENGI 7706

\*\*LH:\*\* at least eight 2-hour sessions per semester

\*\*PR:\*\* CIV 6330 or the former ENGI 6705 or approval of the Head of the Department

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303830>

\*\*Course Title:\*\* CIV 7530 Design of Steel Structures

\*\*Course Information:\*\* CIV 7530 begins with a review of design concepts, standards, and products. Topics include design of members and connections, tension members, bolted joints, welded joints, compression members, stability and effective length, flexural members including beams & beam-columns, plate girders, composite beams, introduction to serviceability through deflections of beams.

\*\*EQ:\*\* the former ENGI 7704

\*\*LH:\*\* five 3-hour sessions per semester OR twelve 1-hour tutorials per semester

\*\*PR:\*\* CIV 5510 or the former ENGI 5706 and CIV 5320 or the former ENGI 5312, or approval of the Head of the Department

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303823>

\*\*Course Title:\*\* CIV 7540 Reliability and Environmental Loading on Offshore Structures

\*\*Course Information:\*\* CIV 7540 begins with an introduction to natural phenomena that cause loading and influence the design of marine structures. Topics include the interpretation and utilization of field data for the determination of design loads for wind, waves currents and ice and case studies of load analysis for the design of offshore structures in Atlantic Canada.

\*\*EQ:\*\* the former ENGI 7707

\*\*PR:\*\* CIV 5320 or the former ENGI 5312

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303816>

\*\*Course Title:\*\* CIV 7620 Environmental Geotechniques

\*\*Course Information:\*\* CIV 7620 examines soil characteristics; soil-water interactions; soil contaminants; advection, diffusion, dispersion, adsorption, and biodegradation; contaminated site characterization; soil and groundwater remediation; waste containment and minimization.

\*\*EQ:\*\* the former ENGI 6718, the former ENGI 7718

\*\*OR:\*\* six 1-hour tutorials per semester

\*\*PR:\*\* CIV 5230 or the former ENGI 5723

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303818>

\*\*Course Title:\*\* CIV 7730 Highway Engineering

\*\*Course Information:\*\* CIV 7730 examines highways transportation systems including driver, vehicle, and road characteristics; geometric design of highways; subgrade and base materials; highway drainage features; design of flexible and rigid pavement; fundamentals of traffic flow and queuing theory; traffic control and analysis of signalized intersections; travel demand and traffic forecasting.

\*\*EQ:\*\* the former ENGI 7745

\*\*LH:\*\* four 3-hour sessions per semester

\*\*PR:\*\* CIV 3710 or the former ENGI 3703, CIV 5230 or the former ENGI 5723

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303822>

\*\*Course Title:\*\* CIV 7820 Project Planning and Control

\*\*Course Information:\*\* CIV 7820 includes an introduction to types of contracts, project delivery approaches, and prevailing contractual relationships. The course examines basic project management techniques for network planning and scheduling (CPM and PERT); principles of resource productivity databases, preliminary estimating, and detailed bid preparation; quantitative approaches for effective control of time, cost, resource, quality, and value of constructed facilities; use of computer software for scheduling, estimating, and control.

\*\*EQ:\*\* the former ENGI 7748

\*\*PR:\*\* completion of Academic Term 6 of the Civil Engineering program

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303836>

\*\*Course Title:\*\* CIV 8000 Civil Engineering Project

\*\*Course Information:\*\* CIV 8000 is a practically oriented design project integrated over the five areas in which Civil programs are offered. Students will operate in consultant groups and will complete a design for a typical Civil Engineering undertaking.

\*\*EQ:\*\* the former ENGI 8700

\*\*LC:\*\* scheduled as required OR 1 client meeting per week, 1 tutorial per week

\*\*PR:\*\* completion of Term 7 of the Civil Engineering program

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303839>

\*\*Course Title:\*\* CIV 8150 Municipal Engineering

\*\*Course Information:\*\* CIV 8150 includes water supply system overview; water consumption estimation; groundwater and surface water sources; oxygen demand and transfer; water treatment processes; water distribution systems and design software; sewer systems and design software; wastewater treatment processes; sludge handling; decentralized and on-site wastewater treatment.

\*\*EQ:\*\* the former ENGI 8713

\*\*PR:\*\* CIV 7140 or the former ENGI 7716

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303848>

\*\*Course Title:\*\* CIV 8550 Structural Building Systems

\*\*Course Information:\*\* CIV 8550 examines geometries, loads, safety and serviceability, procedure of using the national building code for evaluating the governing loads on structural members; approximate analysis of structures; structural forms for low rise structures; design of low rise and steel buildings; lateral load-resisting elements and bracing systems.

\*\*EQ:\*\* the former ENGI 8705

\*\*LH:\*\* 2 OR 1-hour tutorial per week

\*\*PR:\*\* CIV 7530 or the former ENGI 7704

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303849>

\*\*Course Title:\*\* CIV 8560 Offshore Structural Design

\*\*Course Information:\*\* CIV 8560 examines guidelines and international codes and standards for offshore structural design; understanding design constraints and concepts of offshore fixed and floating structures; design consideration for fixed offshore concrete platform; design consideration for offshore platform and floating production system design, and analysis of various support systems of the offshore structure.

\*\*EQ:\*\* the former ENGI 8708

\*\*PR:\*\* CIV 7540 or the former ENGI 7707

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303846>

\*\*Course Title:\*\* CIV 8570 Coastal and Ocean Engineering

\*\*Course Information:\*\* CIV 8570 examines the coastal and ocean environment; ocean circulation and properties; waves and tides; instrumentation and measurement. Additional topics will be drawn from the areas of hydraulic, geotechnical and structural engineering. Relevant field exercises will be conducted.

\*\*EQ:\*\* the former ENGI 8751

\*\*PR:\*\* CIV 6120 or the former ENGI 6713

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303828>

\*\*Course Title:\*\* CIV 8580 Subsea Pipeline Engineering

\*\*Course Information:\*\* CIV 8580 provides an introduction to subsea pipeline engineering with a focus on the mechanical design of offshore pipelines. Stress-based, design-based and limit-states design for strength and stability are examined. Other fundamental pipeline engineering design issues such as materials specification, flow assurance and installation are reviewed. Principles of geotechnical engineering and pipeline/soil interaction analysis techniques are investigated. Special topics are also reviewed.

\*\*EQ:\*\* the former ENGI 8673

\*\*LH:\*\* 2

\*\*PR:\*\* One of CIV 5320, the former ENGI 5312, ME 5602, the former ENGI 5931, ONAE 7002, the former ENGI 6003 or the former ENGI 7002

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303826>

\*\*Course Title:\*\* CIV 8630 Environmental Assessment, Monitoring and Control

\*\*Course Information:\*\* CIV 8630 covers pollution monitoring, and sampling network design; water quality and air quality modelling; environmental risk assessment; environmental impact assessment; site remediation and hazardous waste management, and environmental statistical analysis. There are relevant field trips to local wastewater treatment and landfill facilities, as well as case studies.

\*\*EQ:\*\* the former ENGI 8717

\*\*OR:\*\* At least 2 field trips

\*\*PR:\*\* CIV 4610 or the former ENGI 4717

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303847>

\*\*Course Title:\*\* CIV 8830 Contract Law and Labour Relations

\*\*Course Information:\*\* CIV 8830 is an introduction to law as it applies to engineering activity; the nature of law and legal processes, including standard forms; liens, bonds and insurances; the labour movement in North America; examination of union philosophies and managerial attitudes; labour law and collective bargaining; disputes and settlements.

\*\*CR:\*\* the former ENGI 6740

\*\*EQ:\*\* the former ENGI 8740

\*\*PR:\*\* Completion of Term 7 of the Civil Engineering program

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303821>

\*\*Course Title:\*\* CIV 8900-8999 Special Topics in Civil Engineering

\*\*Course Information:\*\* CIV 8900-8999 involves topics to be studied that will be announced by the Department.

\*\*Course Link:\*\* <https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/11/2/#d.en.303825>