## Tentative List of Graduate Courses in Civil Engineering

### Fall 2020:
1. ENCI 611 – Bituminous Materials
2. ENCI 619 – Integrated Infrastructure for Sustainable Cities
3. ENCI 619 – Wood Design (cross listed with ENCI 595)
4. ENCI 639 – Structural Dynamics
5. ENCI 649 – Conservation of Heritage Structures I
6. ENCI 653 – Theory and Applications of the Finite Element Method
7. ENCI 665 – Fundamentals of Soil Behaviour
8. ENCI 669 – Permafrost Engineering
9. ENCI 695 – Project Construction Management
10. ENCI 699 – Law for Project Managers
11. ENCI 707 – Theory of Transport Demand Modelling

### Winter 2021:
1. ENCI 619 – Engineering Hydrology & Hydraulics
2. ENCI 619 – High Performance Concrete (cross listed with ENCI 595)
3. ENCI 619 – Scientific Computing for Engineers
4. ENCI 619 / ENEN 619 – Sustainable Design for Civil & Environmental Engineering
5. ENCI 633 – Fibre Reinforced Polymers for Construction and Repair of Structures
6. ENCI 637 – Behaviour and Design of Prestressed Concrete Members
7. ENCI 673 – Constitutive Laws for Geomaterials
8. ENCI 689 – Advanced Project Management Practices and Principles
9. ENCI 693 – Project Engineering Management
10. ENCI 709 – Practice of Transport Demand Modelling
11. ENCI 711 – Advanced Analysis and Modelling of Public Transit Systems
12. ENCI 717 – Dynamic Traffic Flow and Network Modelling

## List of Core Graduate Courses in Engineering

### Fall 2020:
1. ENGG 681 – Engineering Tools
2. ENGG 684 – Introduction to Project Management
3. ENGG 687 – Ethics, Law, and the Engineering Profession

### Winter 2021:
1. ENGG 682 – Sustainability
2. ENGG 683 – Innovation and Entrepreneurship
Master of Engineering in Civil Engineering

Students must take a minimum of 10 (3-unit) courses. A maximum of 2 of the 10 courses can be senior (500 level) undergraduate courses from Civil Engineering.

Students must successfully complete a minimum of 6 specialization-specific graduate courses to obtain a specialization in the Civil Engineering MEng program. See next pages for details.

**Recommended courses**

**Fall 2020:**
1. ENGG 681 – Engineering Tools
2. ENGG 684 – Introduction to Project Management
3. ENCI course #1 from Tentative List of Graduate Courses

**Winter 2021:**
4. ENGG 682 – Sustainability
5. ENGG 683 – Innovation and Entrepreneurship
6. ENCI course #2 from Tentative List of Graduate Courses

**Fall 2021:**
7. ENCI course #3
8. ENCI course #4

**Winter 2022:**
9. ENCI course #5
10. ENCI course #6
Master of Engineering in Civil Engineering with specialization in Environmental Engineering

Students must complete a minimum of 10 (3-unit) courses as follows:

A. 4 Core Engineering courses:
   • ENGG 681 – Engineering Tools
   • ENGG 682 – Sustainability
   • ENGG 683 – Innovation and Entrepreneurship
   • ENGG 684 – Introduction to Project Management

B. 6 Environmental Engineering Specialization Courses from the list below:
   • ENEN 603 – Principles of Environmental Engineering
   • ENEN 605 – Environmental Chemistry and Microbiology
   • ENEN 620 – Water Quality
   • ENEN 627 – Contaminant Transport
   • ENEN 641 – Air Pollution Control Engineering
   • ENEN 651 – Solid Waste Engineering
   • ENEN 653 – Contaminated Soil Remediation
   • ENEN 663 – Biological Processes for Wastewater Treatment
   • ENEN 665 – Wastewater Issues for the Oil and Gas Industry
   • ENEN 693 – Life Cycle Assessment

Recommended courses

Fall 2020:
1. ENGG 681 – Engineering Tools
2. ENGG 684 – Introduction to Project Management
3. ENEN course #1 from B list

Winter 2021:
4. ENGG 682 – Sustainability
5. ENGG 683 – Innovation and Entrepreneurship
6. ENEN course #2 from B list

Fall 2021:
7. ENEN course #3 from B list
8. ENEN course #4 from B list

Winter 2022:
9. ENEN course #5 from B list
10. ENEN course #6 from B list
Master of Engineering in Civil Engineering with specialization in Geotechnical Engineering

Students must complete a minimum of 10 (3-unit) courses. At least 6 of the 10 required courses must be from the following list to obtain a MEng in Civil Engineering with specialization in Geotechnical Engineering:

- ENCI 619 – Hydrogeology
- ENCI 619 – Landslides and Slope Stability
- ENCI 665 – Fundamentals of Soil Behaviour
- ENCI 667 – Applied Rock Engineering
- ENCI 669 – Permafrost Engineering
- ENCI 671 – Advanced Foundation Engineering
- ENCI 673 – Constitutive Laws for Geomaterials

Recommended courses

Fall 2020:
1. ENCI 665 – Fundamentals of Soil Behaviour
2. ENCI 669 – Permafrost Engineering
3. Any ENCI 600-level / ENGG 600-level course

Winter 2021:
4. ENCI 673 – Constitutive Laws for Geomaterials
5. Any ENCI 600-level / ENGG 600-level course
6. Any ENCI 600-level / ENGG 600-level course

Fall 2021:
7. ENCI 619 – Landslides and Slope Stability
8. ENCI 667 – Applied Rock Engineering

Winter 2022:
9. ENCI 619 – Hydrogeology
10. ENCI 671 – Advanced Foundation Engineering

Department of Civil Engineering
Fall 2020 / Winter 2021
Contact: meng@ucalgary.ca
Master of Engineering in Civil Engineering with specialization in Project Management

Students must complete a minimum of 10 (3-unit) courses. 6 of the 10 required courses must be from the following list to obtain a MEng in Civil Engineering with specialization in Project Management:

- ENCI 689 – Advanced Project Management Practices and Principles
- ENCI 693 – Project Engineering Management
- ENCI 695 – Project Construction Management
- ENCI 697 – Project Planning and Control
- ENCI 699 – Law for Project Managers
- ENGG 684 – Introduction to Project Management

**Recommended courses**

**Fall 2020:**
1. ENGG 681 – Engineering Tools
2. ENGG 684 – Introduction to Project Management
3. ENCI 699 – Law for Project Managers

**Winter 2021:**
4. ENGG 683 – Innovation and Entrepreneurship
5. ENCI 693 – Project Engineering Management (pre-requisite: ENGG 684)
6. Any ENCI 600-level / ENGG 600-level course

**Fall 2021:**
7. ENCI 695 – Project Construction Management (pre-requisite: ENGG 684)
8. ENCI 697 – Project Planning and Control (pre-requisite: ENGG 681 and ENGG 684)
9. ENGG 687 – Ethics, Law, and the Engineering Profession

**Winter 2022:**
Master of Engineering in Civil Engineering with specialization in Structures & Solid Mechanics

Students must complete a minimum of 10 (3-unit) courses. At least 6 of the 10 required courses must be from the following list to obtain a MEng in Civil Engineering with specialization in Structures and Solid Mechanics:

- ENCI 617 – Fracture of Civil Engineering Materials
- ENCI 619 – High Performance Concrete
- ENCI 621 – Computer Analysis of Structures
- ENCI 623 – Behaviour and Design of Reinforced Concrete Members
- ENCI 627 – Sustainable Serviceability of Concrete Structures
- ENCI 633 – Fibre Reinforced Polymers for Construction and Repair of Structures
- ENCI 635 – Behaviour and Design of Prestressed Concrete Bridges and Other Structures
- ENCI 637 – Behaviour and Design of Prestressed Concrete Members
- ENCI 639 – Structural Dynamics
- ENCI 641 – Seismic Analysis and Design
- ENCI 643 – Structural Masonry Design
- ENCI 645 – Risk Analysis
- ENCI 647 – Structural Reliability Analysis
- ENCI 649 – Conservation of Heritage Structures I
- ENCI 651 – Conservation of Heritage Structures II
- ENCI 653 – Theory and Applications of the Finite Element Method
- ENCI 659 – Sustainable Infrastructure
- ENCI 671 – Advanced Foundation Engineering

Recommended courses

Fall 2020:
1. ENCI 513 – Structural Concrete Design (senior undergraduate course)
2. ENCI 639 – Structural Dynamics
3. ENCI 649 – Conservation of Heritage Structures I

Winter 2021:
4. ENCI 557 – Structural Steel Design (senior undergraduate course)
5. ENCI 633 – Fibre Reinforced Polymers for Construction and Repair of Structures
6. ENCI 637 – Behaviour and Design of Prestressed Concrete Members

Fall 2021:
7. ENCI 621 – Computer Analysis of Structures
8. ENCI 653 – Theory and Applications of the Finite Element Method

Winter 2022:
9. ENCI 619 – High Performance Concrete
10. ENCI 623 – Behaviour and Design of Reinforced Concrete Members