Department of Civil and Environmental Engineering
New Jersey Institute of Technology

Qualifying Examination

PhD Civil Engineering/Environmental Engineering

Content of Exam

Part 1A – Graduate level in area of specialization. To provide some guidance to the Ph.D. candidate, the subject areas to be covered by area of specialization follow. Typically, students can select any **four** questions from **six** possible questions.

Environmental

Environmental (Water) Chemistry (EnE 663)
Environmental Microbiology (EnE 661)
Introduction to Solid and Hazardous Waste (EnE 660)
Water and Wastewater Treatment (EnE 664 and EnE 665)

Transportation

Transportation Economics (TRAN 610)
Transportation Financing (TRAN 643)
Traffic Engineering (CE 657)
Transportation Systems
Urban Transportation Planning (CE 750)

Structural

Applied Finite Element Methods (CE 639)
Advanced Reinforced Concrete Design (CE 631)
Structural Dynamics (CE 634)
Stability of Structures (CE 636)

Geotechnical

Engineering Properties of Soil (CE 641)
Foundation Engineering (CE 642)
Advanced Foundation Engineering (CE 643)
Theoretical Soil Mechanics (CE 741)

Geoenvironmental

Applied Hydrogeology (CE 618)
Engineering Properties of Soil (CE 641)
Geotechnical Aspects of Solid Waste (CE 647)
Site Remediation (EnE 662)
Environmental Chemistry (EnE 560)
Introduction to Solid and Hazardous Waste (EnE 660)

Construction Management

Construction Management (CE 610)
Project Planning and Control (CE 611)
Construction Cost Estimating (CE 616)
Underground Construction (CE 614)

Part 1B (CE) – **Undergraduate mechanics questions. Eight** questions from the areas shown below. Students select any **three** questions.

Statics
Dynamics
Mechanics of Materials
Fluid Mechanics
Soil Mechanics

Part 1B (EnE) – Undergraduate mechanics questions. Two questions from each of the areas shown below. Students select any **three** questions.

Hydraulic Engineering
Water Resources Engineering
Transfer Phenomenon
Soil Behavior

Part 1C – Undergraduate Mathematics. Two questions from **calculus, two** questions from **ordinary differential equations,** and **two** questions from **statistics and probability.** Students select any **two.**

Part 1D. Essay on topic of general interest.

Additional Requirements

1. All Ph.D. candidates admitted with a M.S. degree must take their first Ph.D. Qualifying Exam no later than the second semester after they have been admitted into our doctoral program.
2. All BS/Ph.D. candidates are required to take their first Ph.D. Qualifying Exam no later than the third semester after they have been admitted into our doctoral program.
3. There are two chances for each candidate to pass all four parts of the Ph.D. Qualifying Exam. Any candidate who fails to meet these requirements will be terminated from our doctoral programs.
4. Ph.D. Qualifying Exam for all majors of Civil and Environmental Engineering, except Transportation and Environmental Engineering, will be conducted by the Director of Graduate Studies of our Civil and Environmental Engineering Department. Ph.D. Qualifying Exam for those with Transportation Engineering and Environmental Engineering major will be conducted by the designated Faculty member of their own group.