

CIVIL AND ENVIRONMENTAL ENGINEERING

GRADUATE HANDBOOK



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Department of Civil and Environmental Engineering (CEE)

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PART I: INTRODUCTION

Program Overview

The Department of Civil and Environmental Engineering graduate program currently offers two degrees: the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) in Civil and Environmental Engineering. Each of these degrees requires the student to meet specific requirements of both the University of Nebraska-Lincoln Office of Graduate Studies and the Department of Civil and Environmental Engineering. This handbook describes the departmental programs and requirements for each degree. This handbook is to be considered a supplement to the Graduate Studies Policies. Students who intend to pursue Professional Engineer (P.E.) licensure in the United States, particularly those without an ABET-accredited undergraduate engineering degree, are encouraged to review Appendix A: NCEES Engineering Education Standard and Professional Licensure Guidance. Students are advised to consult the Graduate Studies Policies at <https://catalog.unl.edu/graduate-professional/graduate/>. Students should direct specific inquiries with respect to the Civil and Environmental Engineering graduate programs to the following:

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This handbook is divided into five parts. Part I discusses the Civil and Environmental Engineering graduate program mission and goals, faculty and staff. Parts II and III describe the graduate degree requirements for the MS and Ph.D. Part IV covers assistantships and other financial support opportunities. Part V covers academic integrity and professional development.

Program Mission and Goals

The mission of the Department of Civil and Environmental Engineering is to foster a strong, forward-looking, and collaborative academic environment that advances practical knowledge and technical excellence in civil and environmental engineering; to educate our students to their fullest potential; and to serve the public through outreach and professional activities. In particular, the mission involves:

- Providing the nation with a new generation of engineers that can meet the challenges of the 21st century, particularly related to civil infrastructure
- Serving the state of Nebraska and the nation by providing state-of-the-art expertise in civil and environmental engineering
- Making important contributions in various areas of civil and environmental engineering by advancing existing knowledge and developing new technologies
- Facilitating the enrichment of the academic and professional experience of students, faculty and the engineering community
- Providing outreach to the public and private sectors

Graduate Programs

The Department of Civil and Environmental Engineering offers graduate degrees in Civil and Environmental Engineering. The MS degree requires completion of 30 credit hours. Detailed requirements regarding credit hours and minors for the MS degree options in Civil and Environmental Engineering can be found in Part II of the document.

- Option A is a thesis-based option. Option A is most appropriate for students who are preparing for careers in research and scholarly work or additional academic pursuits beyond the master's degree.
- Option B is a coursework-based option and does not require a thesis. Option B is most appropriate for students pursuing practice-based or professional careers in which the master's degree provides suitable training.

The Accelerated Master's Degree in Civil and Environmental Engineering program offers qualified undergraduate students the opportunity to enroll in up to 12 credit hours of graduate-level courses that apply toward both their bachelor's and master's degrees. By completing a portion of their graduate coursework early, students can accelerate their progress and earn a master's degree with only one additional year of study beyond the BS degree. The Option B MS degree is the most common pathway for students pursuing the Accelerated Master's option.

Doctoral study is intended for students seeking in-depth knowledge in an area of civil and environmental engineering beyond that resulting from an MS degree, and who wish to pursue faculty positions or other research positions in industry or governmental institutions. Applicants with a BS may apply directly to the PhD program. The minimum amount of graduate credit required for a PhD is 90 semester hours, including a minimum of 12 hours of dissertation credits. Detailed requirements regarding coursework and research credits for the PhD degree in Civil and Environmental Engineering can be found in Part II of the document. Some course work done for an MS degree may be applied toward the required semester hours with approval of the student's supervisory committee and the Dean of Graduate Studies.

In the Department of Civil and Environmental Engineering, oversight for graduate programs

resides with the Graduate Committee, which consists of an elected faculty representative from each of the five discipline areas of civil and environmental engineering (environmental, geotechnical/materials, structures, transportation, water resources). The graduate chair serves as the head of this committee and is a point of contact for all Civil and Environmental Engineering graduate students. The graduate secretary assists the Graduate Committee with administration of the graduate program and can be a helpful point of contact for students during their graduate study.

CEE Specialization Areas and Associated Faculty

The current Civil and Environmental Engineering faculty are listed by their area of specialization, and can be found at <https://engineering.unl.edu/civil/about/faculty-staff/>.

Environmental Engineering

The environmental engineering faculty offer graduate courses in environmental engineering chemistry, physical chemical treatment processes, biologic treatment processes, design of water and wastewater treatment, environmental microbiology and solid and hazardous waste management. The faculty are engaged in research in environmental microbiology and biotechnology, fate and transport of inorganic and organic contaminants in soil and water, design of drinking water and wastewater treatment technologies, sustainability of engineered processes, smart and advanced materials for water treatment.

Geotechnical and Materials Engineering

The geotechnical and materials engineering faculty offer graduate courses in advanced soil mechanics, foundation design, flexible and rigid pavement design, infrastructure materials (cementitious and bituminous), and advanced characteristics, mechanics and modeling of infrastructure materials and geotechnics. The faculty are engaged in various research focuses on sustainable and resilient materials, characteristics and modeling of construction materials and infrastructure systems, mechanistic analysis and design with multi-physical phenomena, safety and reliability of geotechnical structures supported on soils and foundations, energy geotechnics, and sustainable infrastructure/geotechnical systems.

Structural Engineering

The structural engineering faculty offers graduate courses in advanced structural analysis, steel and concrete design, and bridge engineering. The faculty are engaged in research in structural dynamics, non-destructive testing, design of specialized concrete, bridge design, remote sensing, and protective design.

Transportation Engineering

The transportation engineering faculty offer graduate courses in transportation planning, design, operations, and safety, with a strong focus on surface transportation. Faculty research spans a broad range of topics, including transportation planning and safety, intelligent transportation systems, artificial intelligence methods in transportation, autonomous vehicles, traffic flow theory and operations, human factors, roadway design and operations, sustainable and alternative energy for mobility, large-scale modeling and simulation, transportation economics, and airport planning and design.

Water Resources Engineering

The water resources engineering faculty offer courses in surface water hydrology, groundwater engineering, hydraulic engineering, and water resources planning. The faculty are engaged in research in hydraulics, fluid mechanics, flow measurement and modeling, sediment transport, computational fluid dynamics (CFD), application of remote sensing and GIS in water resources, groundwater remediation, fate and transport of contaminants in groundwater, water resources management and risk analysis.

CEE Support Staff

The Department has a number of various staff members, including administrative coordinators, administrative technicians, and a lab manager at both the City (Lincoln) and Scott (Omaha) Campuses who support the graduate program. Their contact information can be found at <https://engineering.unl.edu/civil/about/faculty-staff/>.

PART II: General Graduate Program Policies and Requirements

Advising Structure and Roles

Supervising Professor/Academic Advisor

The Civil and Environmental Engineering Graduate Committee provides oversight of academic advising for all MS and PhD students in the graduate programs. As a matter of departmental policy, an offer of admission is made only after at least one Civil and Environmental Engineering faculty member has expressed interest in advising the applicant. For students in the Civil and Environmental Engineering MS program under Option A, the faculty advisor is the student's academic advisor and thesis advisor. For Option B MS students, the faculty advisor serves as the academic advisor. For PhD students, the academic advisor (chair or co-chair) must be a member of the Graduate Faculty with full doctoral advising privileges, as defined by the UNL Office of Graduate Studies. For MS students, a Graduate Faculty Associate may serve as the academic advisor, consistent with UNL and departmental policies. All Civil and Environmental Engineering graduate students must have a Civil and Environmental Engineering graduate faculty member as their academic advisor, including those Civil and Environmental Engineering students funded by faculty from another department. If a faculty member from another department is providing funding for a Civil and Environmental Engineering graduate student, that faculty member may serve as a co-chair of the student's committee.

At the time of admission into the program, all students are assigned an advisor. Students who are admitted to the graduate program with a research assistantship that is provided by a particular faculty member will be assigned to that faculty member as their academic advisor and thesis advisor. Other students may be admitted with a graduate assistantship or fellowship that is from general funds or third-party funds and not explicitly tied to a particular faculty member. In those cases, the selection of an advisor is typically based on mutual research interests, based on inputs received from Civil and Environmental Engineering faculty during the admissions process. If more than one faculty member has agreed to be the advisor for an applicant, the graduate student's initial temporary academic advisor will be the graduate committee member for the graduate student's discipline. The newly admitted graduate student will then visit with all faculty expressing interest in advising the student, and the student will select their advisor from the Civil and Environmental Engineering faculty expressing interest in advising the student. All newly admitted graduate students with a choice of academic advisors must choose their academic advisor within the first month and no later than the end of the first semester.

A student may change advisors if both the student and the advisor mutually agree that the change would be beneficial. A common reason for changing advisors is that the student develops a stronger research interest aligned with another faculty member than with the originally assigned advisor.

Formation of the Thesis/Dissertation Committee

Graduate students pursuing a research-based degree are responsible for forming a guidance committee in accordance with departmental and UNL Office of Graduate Studies policies. MS students selecting the thesis option (Option A) and all PhD students must form a thesis or dissertation committee with the assistance and approval of their academic advisor and the approval of the Graduate Chair. The committee should be established early enough to provide meaningful guidance on the student's research direction, coursework planning, and progress toward degree.

milestones. Specific requirements regarding committee composition, timing of formation, member eligibility, and roles differ between the MS and PhD programs and are described in detail in Part III (MS Program) and Part IV (PhD Program) of this handbook, respectively.

Roles and Responsibilities of the Thesis/Dissertation Advisor

The primary responsibilities of the thesis/dissertation advisor are to provide academic guidance and oversight to support the student's timely and successful progress toward degree completion. At a minimum, the advisor is responsible for:

- Serving as the primary point of contact for the student on routine academic matters, including initial questions related to coursework, degree requirements, policies, and academic milestones.
- Assisting the student in developing and maintaining an appropriate program of study and research plan.
- Guiding the selection and formation of the thesis/dissertation committee.
- Providing scholarly oversight of the student's thesis/dissertation research, including regular meetings and feedback on progress and readiness for required examinations.

Detailed expectations regarding mentoring practices, communication, and professional development are described in Appendix B: Mutual Expectations of Mentors and Mentees.

Roles and Responsibilities of the Student

Graduate students are responsible for actively managing their academic progress and fulfilling degree requirements. At a minimum, students are expected to:

- Maintain regular communication with their academic advisor regarding coursework, research progress, and degree milestones.
- In consultation with the advisor, form a thesis/dissertation committee and engage committee members at appropriate stages of the research process.
- Meet all program deadlines, including submission of required forms and scheduling of examinations.
- Conduct research and academic activities in accordance with professional and ethical standards.

Detailed expectations regarding student responsibilities, communication, and professional conduct are described in Appendix B: Mutual Expectations of Mentors and Mentees.

Mentoring and Communication Expectations

Graduate students and faculty advisors are expected to maintain open and professional communication consistent with the mentoring expectations outlined in Appendix B: Mutual Expectations of Mentors and Mentees. Appendix B serves as the primary reference for expectations related to communication, mentoring practices, and professional development.

Roles and Responsibilities of the Thesis/Dissertation Committee

The responsibilities of the thesis/dissertation committee include the following:

- Advising graduate students on coursework and research.
- Providing feedback and guidance concerning progress toward the degree.
- Reviewing the thesis/dissertation in a timely, constructive, and critical manner.

Roles and Responsibilities of the Graduate Committee

The Graduate Committee provides program-level oversight for graduate education in the Department of Civil and Environmental Engineering.

- Oversees implementation of departmental and Office of Graduate Studies (OGS) policies related to graduate education.
- Advises the Graduate Chair on admissions, curriculum, academic standards, and graduate student progress with input from other faculty members.
- Reviews requests related to advisor assignment, committee composition, and non-graduate faculty participation, consistent with departmental and OGS policies.

Roles and Responsibilities of the Graduate Chair

The Graduate Chair serves as the primary academic administrator for the graduate program and the official liaison with the Office of Graduate Studies.

- Reviews, approves, and submits required graduate program forms and official documents to OGS.
- Serves as the primary and confidential point of contact for advisor-related matters, assisting students and faculty and facilitating changes of advisor when necessary.
- Implements and applies departmental and OGS graduate policies in consultation with the Graduate Committee, as appropriate.

Roles and Responsibilities of the Graduate Secretary

The Graduate Secretary provides administrative coordination and support for the graduate program.

- Serves as a primary point of contact for students and faculty on graduate procedures and deadlines.
- Processes and tracks graduate forms, records, and communications related to admissions, examinations, and defenses.
- Coordinates preparation and routing of materials for review and submission to the Graduate Committee, Graduate Chair, Department Chair, and OGS.

Roles and Responsibilities of the Department Chair

The Department Chair provides overall administrative leadership and oversight of the graduate program.

- Oversees departmental resources and administrative processes that support graduate education.
- Works in coordination with the Graduate Chair to navigate situations that may affect a student's ability to continue in the program.
- Facilitates appropriate arrangements when an advisor leaves the University to support timely degree completion.

Deficiency Course Requirements

As graduate students may enter the Civil and Environmental Engineering program with varied academic backgrounds, some students may be required to complete deficiency courses to address gaps in prior preparation or to satisfy prerequisite requirements for graduate-level coursework. These courses are intended to ensure that students have the foundational knowledge necessary to succeed in advanced courses and research. Deficiency courses do not count toward degree credit or program credit requirements.

Deficiency course requirements may be identified based on a review of the student's academic background at admission or through consultation with the student's academic advisor when planning graduate coursework. In particular, students who have not completed the required undergraduate prerequisite courses for specific graduate-level courses may be required to complete additional preparatory coursework before or alongside graduate study. Students are expected to discuss any deficiencies or prerequisite course requirements with their academic advisor during initial advising meetings and to develop a plan for timely completion. All deficiency course requirements should be addressed as early as practicable in the program to support satisfactory progress toward degree completion.

Area-Specific MS and PhD Program Coursework Requirements

Within the Department of Civil and Environmental Engineering, the following MS specializations are offered: Environmental Engineering, Geotechnical and Materials Engineering, Structural Engineering, Transportation Engineering, and Water Resources Engineering. Information regarding coursework and exam requirements for each specialization follows. Please note that selection of a specialization with the MS program in Civil and Environmental Engineering is not required. The decision to pursue a specific specialization should be made with the input of your graduate advisor.

Please be advised that course numbers, titles, and descriptions listed in this handbook are subject to change. Students are responsible for consulting the official University of Nebraska–Lincoln Graduate Catalog for the most current course numbers, titles, and descriptions. The current Civil and Environmental Engineering course listings are available at: <https://catalog.unl.edu/graduate-professional/courses/cive/>.

General Department Requirements:

To support graduate student success, the Department of Civil and Environmental Engineering encourages the following:

Professional Preparation Coursework: All MS and PhD students are encouraged to enroll in the *CIVE 801 Introduction to Civil and Environmental Engineering (CEE)*, which introduces research and interpersonal management skills. Option A MS students and PhD students are encouraged to take coursework in *CIVE 901 Research Methodology in CEE* and *CIVE 902 Technical Writing in CEE*. Students should consult with their advisor to discuss enrollment expectations.

Graduate Seminar Courses: All graduate students are expected to participate actively in the Civil and Environmental Engineering graduate seminar (CIVE 990E/M/R/T) as part of their professional development.

Option A MS students must enroll for at least 1 credit hour during their program. PhD students must enroll in CIVE 990 for a minimum of 3 credit hours over the course of their doctoral study. Option B MS students are encouraged to enroll. Specializations or faculty advisors may establish additional seminar enrollment or participation requirements, as described in the specialization-specific sections of this handbook.

Regardless of enrollment, all graduate students are expected to attend seminar sessions each semester the course is offered.

Thesis/Defense Attendance: Students are expected to attend thesis and dissertation defenses during their program as part of their professional development, at least two defenses for MS students and four for PhD students.

Specialization in Environmental Engineering:

Preparatory/Required Undergraduate Courses

Although an undergraduate degree in Civil and Environmental Engineering is not required as a prerequisite to the MS and PhD programs in environmental engineering, students who do not have a BS in Civil and Environmental engineering will typically be required to complete those undergraduate courses that provide an appropriate background. Required undergraduate preparatory coursework will include mathematics through differential equations; a course in computer programming; 12 hours of chemistry, physics or geology courses, and 12 hours of engineering sciences courses including statics, fluid mechanics and 6 hours of coursework from the following courses (or their equivalent): MECH 373 Engineering Dynamics, MECH 325 Mechanics of Elastic Bodies, CHME 332 Transport Operations I, PHYS 212, and ELEC 211

An introductory course in environmental engineering (CIVE 321 or equivalent), an introductory environmental engineering laboratory course (CIVE 321L or equivalent), and one additional 400-level environmental engineering course (such as CIVE 425 Environmental Engineering Process Design) will typically be required. Note that 100, 200-, 300-, and 400- level courses cannot be counted toward the graduate program requirements.

Required Core Courses (10 credit hours)

CIVE 821 Environmental Engineering Chemistry (3 credits)

CIVE 823 Physical/Chemical Treatment Processes (3 credits)

CIVE 829 Biological Treatment Processes (3 credits)

ENVE 990 Seminar in Environmental and Water Resources Engineering (3 credits)

Students who have already completed these core courses may substitute additional elective courses in place of the required core courses within their program of study, provided that the total number of credit hours remains the same.

Elective Courses

Each student must also choose electives that provide depth in his/her chosen area of focus within environmental engineering and/or appropriate breadth. These courses are to be selected in conjunction with and approved by the student's faculty advisor and supervisory committee. Relevant electives are listed below but not limited to the following:

Courses offered in the Department of Biological Systems Engineering

AGEN 853 Irrigation and Drainage Systems Engineering

AGEN 953 Advanced Irrigation and Drainage Systems Engineering

AGEN 954 Hydraulic Modeling of Small Watersheds

AGEN 955 Solute Movement in Soils (AGRO 955, CIVE 955)

BSEN 841 Animal Waste Management

BSEN 855 Nonpoint Source Pollution Control Engineering

BSEN 941 Agricultural Waste Management

BSEN 943 Bioenvironmental Engineering

Courses offered in the Department of Chemical Engineering

CHME 832 Transport Operations
CHME 835 Transport Phenomena
CHME 842 Chemical Reactor Engineering and Design
CHME 845 Advanced Chemical Engineering Kinetics
CHME 873 Biochemical Engineering
CHME 892 Air Pollution Assessment and Control

Courses offered in the Department of Civil and Environmental Engineering

CIVE 819 Flow Systems Design
CIVE 821 Hazardous Waste Management and Treatment
CIVE 822 Pollution Prevention: Principles and Practices
CIVE 824 Solid Waste Management Engineering
CIVE 826 Design of Water Treatment Facilities
CIVE 827 Design of Wastewater Treatment and Disposal Facilities
CIVE 830 Fundamentals of Water Quality Modeling
CIVE 831 Small Treatment Systems
CIVE 832 Bioremediation of Hazardous Wastes
CIVE 852 Water Resources Development
CIVE 854 Hydraulic Engineering
CIVE 856 Surface Water Hydrology
CIVE 858 Groundwater Engineering
CIVE 875 Water Quality Strategy (AGRO 875)
CIVE 891 Special Topics
CIVE 915 Water Resources Engineering
CIVE 916 Interdisciplinary Seminar in Engineering Economics and Legal Aspects of Water Resources Systems
CIVE 921 Advanced Topics in Hazardous Waste Treatment and Remediation
CIVE 926 Advanced Topics in Water Treatment
CIVE 927 Advanced Topics in Water Treatment
CIVE 952 Water Resources Planning
CIVE 954 Advanced Hydraulics
CIVE 955 Solute Movement in Soils (AGEN 955, AGRO 955)
CIVE 958 Groundwater Mechanics
CIVE 959 Groundwater Modeling

Specialization in Geotechnical and Materials Engineering:

Preparatory/Undergraduate core courses

Although an undergraduate degree in civil and environmental engineering is not required as a prerequisite to the MS and PhD programs in geotechnical/materials engineering, students who do not have a BS in civil and environmental engineering will typically be required to complete those undergraduate courses that provide an appropriate background. Required undergraduate preparation would generally include mathematics (through calculus, geometry, and differential equations), an introductory course in statistics (e.g., STAT 380 at UNL) or an equivalent, and engineering mechanics (e.g., MECH 223 and 325 at UNL). General introductory courses in geotechnical-materials (e.g., CIVE 331 and 371 at UNL) are also necessary. Note that 100-, 200-,

300-, and 400- level courses cannot count toward the graduate program requirements.

Required core courses (9 credits)

Geotechnical/Materials engineering graduate students are encouraged to take all courses listed as core courses, below. However, students are required to take a minimum of 9 total credits of core courses. Students who have already taken such courses have more electives available to them as part of their programs. All MS Option A and PhD students in Geotechnical and Materials Engineering are also required to take CIVE 990M for a seminar at least once (1-credit).

CIVE 831 Advanced Soil Mechanics (3 credits)

CIVE 836 Foundation Engineering (3 credits)

CIVE 874 Advanced Materials of Construction (3 credits)

Students who have already completed these core courses may substitute additional elective courses in place of the required core courses within their program of study, provided that the total number of credit hours remains the same.

Elective courses

Each student must also choose electives that provide depth in his/her chosen area of focus within geotechnical/materials engineering and/or appropriate breadth. These courses are to be selected in conjunction with and approved by the student's faculty advisor and supervisory committee. Relevant electives are listed below but are not limited to this.

Civil Engineering Electives

CIVE 832 Rock and Poromechanics

CIVE 842 Structural Dynamics

CIVE 843 Advanced Structural Analysis

CIVE 847 Reinforced Concrete Design II

CIVE 850 Prestressed Concrete

CIVE 865 Highway Geometrics

CIVE 873 Bituminous Materials and Mixtures

CIVE 971 Infrastructural Materials Distresses

CIVE 931 Numerical Simulation on Multiphysics Coupling

CIVE 932 Instrumentation in Geotechnical Engineering

CIVE 933 Large Strain Behavior in Geomaterials

CIVE 891 Special Topics in Civil Engineering (by permission of advisor only)

CIVE 991 Special Topics in Civil Engineering (by permission of advisor only)

Construction Management Electives

CNST 885 Construction Project Scheduling and Control

CNST 886 Construction Management Systems

Mechanical and Materials Engineering Electives

MECH 847 Advanced Dynamics

MECH 848 Advanced Mechanics of Materials

MECH 854 Introduction to Continuum Modeling

MECH 852 Experimental Stress Analysis I

MECH 880 Numerical Methods in Engineering

MECH 910 Continuum Mechanics
MECH 918 Fundamentals of Finite Elements
MECH 930 Mechanics of Composite Materials
MECH 933 Theory of Elasticity I
MECH 934 Theory of Elasticity II
MECH 939 Viscoelasticity
MECH 940 Fracture Mechanics
MECH 942 Theory of Plasticity

Statistics Electives

STAT 801 Statistical Methods in Research
STAT 802 Experimental Design
STAT 870 Multiple Regression Analysis

Mathematics Electives

MATH 814 Applied Linear Algebra
MATH 815 Modern Algebra with Applications
MATH 821 Differential Equations
MATH 822 Advanced Calculus
MATH 824 Introduction to Partial Differential Equations
MATH 827 Mathematical Methods in the Physical Sciences
MATH 830 Ordinary Differential Equations I
MATH 831 Ordinary Differential Equations II
MATH 840 Numerical Analysis I
MATH 842 Methods of Applied Mathematics I
MATH 843 Methods of Applied Mathematics II

Specialization in Structural Engineering:

Preparatory/Undergraduate core courses

Although an undergraduate degree in civil and environmental engineering is not required as a prerequisite to the MS and PhD programs in structural engineering, students who do not have a BS in civil and environmental engineering will normally be required to complete those undergraduate courses that provide an appropriate background. Required undergraduate preparation would generally include mathematics through differential equations and an introductory course in statistics (e.g., STAT 380 at UNL) or an equivalent. Engineering mechanics (e.g., MECH 223 and 325 at UNL) are required. A general introductory course in structures (e.g., CIVE 341 at UNL) and one in a specific area (i.e., reinforced concrete design, steel design, and structural analysis) are also recommended. Note that 100-, 200-, 300-, and 400- level courses cannot count toward the graduate program requirements.

Required basic core courses

Structural engineering graduate students are encouraged to take all courses listed as core courses, below. However, students are *required* to take a minimum of 9 total credits of core courses. All structural engineering graduate students are also required to take CIVE 990R for seminar at least once (1-credit).

Required core courses (any 9 credits):

CIVE 842 Structural Dynamics (3 credits)
CIVE 843 Advanced Structural Analysis (3 credits)
CIVE 846 Steel Design II (3 credits)
CIVE 847 Reinforced Concrete Design II (3 credits)
CIVE 849 Introduction to Finite Element Analysis (or MECH 851 Introduction to Finite Element Analysis) (3 credits)
CIVE 850 Prestressed Concrete (3 credits)

Students who have already completed these core courses may substitute additional elective courses in place of the required core courses within their program of study, provided that the total number of credit hours remains the same.

Elective courses

Each student must also choose electives that provide depth in his/her chosen area of specialization within structural engineering and/or appropriate breadth. These courses are to be selected in conjunction with and approved by the student's faculty advisor and supervisory committee. Commonly selected relevant structures electives taken by students specializing in Structural Engineering are listed below. Electives are not limited to this list, however.

CIVE 831 Soil Mechanics II
CIVE 836 Foundation Design
CIVE 839 Introduction to Bridge Design
CIVE 848 Reliability of Structures
CIVE 891 Nondestructive Testing
CIVE 945 Structural Design for Dynamic Loads
CIVE 948 Blast-resistant Structural Design
AREN 851 Masonry and Timber Design
MECH 854 Introduction to Continuum Modeling
MECH 933 Theory of Elasticity I
MECH 940 Fracture Mechanics
MECH 942 Theory of Plasticity

Specialization in Transportation Engineering:

Preparatory/Undergraduate core courses

Although an undergraduate degree in civil and environmental engineering is not required as a prerequisite to the MS and PhD programs in transportation engineering, students who do not have a BS in civil and environmental engineering will normally be required to complete those undergraduate courses that provide an appropriate background. Required undergraduate preparation would generally include mathematics through differential equations and an introductory course in statistics (e.g., STAT380 at UNL) or an equivalent. A general introductory course in transportation (e.g., CIVE 361 at UNL) and one in a specific area (i.e., traffic engineering, highway design, and transportation planning) are also desirable. Note that 100-, 200-, 300-, and 400 -level courses cannot count toward the graduate program requirements.

Required basic core courses

Basic/core courses (9 credits), listed below, provide exposure to the various aspects of transportation and background in applied statistics (implicit in the 800-level transportation

classes). Students who have already taken such courses have an increased number of electives that they can take as part of their program.

CIVE 861 Urban Transportation Planning (3 credits)

CIVE 862 Highway Design (3 credits)

CIVE 863 Traffic Engineering (3 credits)

Students must either take the classes above or show that they have taken equivalent courses in their undergraduate program or equivalent courses approved by faculty of the specialization.

Required core courses

In addition to the required courses above (transportation planning, highway design, and traffic engineering), PhD students are also required to take the three following courses for a total of nine (9) credits. These courses provide more depth in key areas.

CIVE 864 Analysis & Estimation of Transportation Demand (3 credits)

CIVE 865 Highway Geometrics (3 credits)

CIVE 866 Transportation Characteristics (3 credits)

In addition to the three courses above, all PhD students are required to take the following:

STAT801 Statistical Methods in Research (4 credits)

CIVE990T Transportation Seminar (1 credit)

Students who have already completed these core courses may substitute additional elective courses in place of the required core courses within their program of study, provided that the total number of credit hours remains the same.

Elective courses

Each student must also choose electives that provide depth in his/her chosen area of specialization within transportation and/or appropriate breadth. These courses are to be selected in conjunction with and approved by the student's faculty advisor and supervisory committee. Relevant transportation electives are listed below. Electives are not limited to this list, however.

Civil Engineering Electives

CIVE 867 Transportation Safety Engineering (3 credits)

CIVE 963 Highway Safety Data Analysis (3 credits)

CIVE 964 Theory of Traffic Flow (3 credits)

CIVE 965 Traffic Control Systems (3 credits)

CIVE 967 Analysis & Design of Transportation Supply Systems (3 credits)

Specialization in Water Resources Engineering:

Preparatory/Undergraduate Core Courses

Although an undergraduate degree in civil and environmental engineering is not required as a prerequisite to the MS and PhD programs in civil and environmental engineering with a specialization in Water Resources Engineering, students who do not have a BS in Civil and Environmental Engineering will be required to complete those undergraduate courses that provide

an appropriate background for PhD study in Water Resources Engineering. Required undergraduate preparation would include: all of the mathematics required in the Civil and Environmental Engineering undergraduate program (i.e., mathematics through differential equations), all physics required in the Civil and Environmental Engineering undergraduate program, engineering statics, engineering dynamics, an introductory course in statistics, fluid mechanics, and an introductory course in water resources engineering.

Required Core Courses

To obtain a specialization in water resources engineering, students must take at least one course from each of the three focus areas (surface water, groundwater, and hydraulics) listed below or demonstrate to the satisfaction of the specialization advisory committee that they have taken sufficient coursework to cover the material in these courses. Students who have already taken such courses have an increased number of electives that they can take as part of their program.

Surface Water Focus Area (any 3 credits)

- CIVE 456/856 Surface Water Hydrology
- CIVE 452/852 Water Resources Development
- CIVE 853 GIS in Water Resources
- CIVE 950 Statistical Hydrology

Groundwater Focus Area (any 3 credits)

- CIVE 491/891 Groundwater Geology
- CIVE 958 Transport in Porous Media
- CIVE 957 Modeling Vadose Zone Hydrology
- GEOL 988 Groundwater Modeling

Hydraulics Focus Area (any 3 credits)

- CIVE 854 Hydraulic Engineering
- CIVE 954 Advanced Hydraulics
- CIVE 419/819 Flow Systems Design
- CIVE 498/898 Sediment Transport

ENVE 990 Environmental and Water Resources Seminar (1 credit)

Students who have already completed these core courses may substitute additional elective courses in place of the required core courses within their program of study, provided that the total number of credit hours remains the same.

Elective Courses

Students must choose electives that provide depth and breadth in water resources engineering. These courses are to be selected in conjunction with, and approved by the student's faculty advisor and supervisory committee.

A partial list of relevant water resources electives is provided below:

- CIVE 819 Flow Systems Design (3 credits)
- CIVE 830 Fundamentals of Water Quality Modeling
- CIVE 852 Water Resources Development

CIVE 855 Nonpoint Source Pollution Control Engineering
CIVE 875 Water Quality Strategy
CIVE 898 Special Topics
CIVE 915 Water Resources Engineering
CIVE 916 Interdisciplinary Seminar in Engineering: Economic and Legal Aspects of Water Resources Systems
CIVE 952 Water Resources Planning
CIVE 954 Advanced Hydraulics
CIVE 958 Groundwater Mechanics
AGEN 853 Irrigation and Drainage Systems Engineering
AGEN 953 Advanced Irrigation and Drainage Systems Engineering
AGEN 954 Hydraulic Modeling of Small Watersheds
AGEN 955 Solute Movement in Soils

PART III: MASTERS OF SCIENCE PROGRAM IN CIVIL and Environmental ENGINEERING

A Roadmap to Your MS Degree in Civil and Environmental Engineering

Students pursuing the M.S. Degree in Civil Environmental Engineering can follow a thesis option (Option A) or a non-thesis option (Option B), where Option B is the most common for the Accelerated Master's program. The typical path towards a M.S. Degree in Civil Environmental Engineering is as follows:

- Gain admission to the program.
- You will be assigned an initial advisor upon admission. After arriving on campus, meet with your advisor to plan your first semester schedule. Students may change advisors unless the current advisor is supporting the student on a specific research project. In such cases, the student should first discuss the situation with the current advisor to determine how existing research obligations will be met. Then, consult with the Graduate Chair and your potential new advisor.
- Removal of admission deficiencies. If you have admission deficiencies, you will need to work with your advisor to develop a plan to remove them.
- The Memorandum of Courses must be filed before grades (letter grades, no reports or incompletes) have been received in more than one-half of the program and on recommendation of the major and minor departments and approval of the Dean of Graduate Studies. The Memorandum of Courses is developed by the student and his or her advisor and serves as a roadmap of coursework needed to complete the MS. If needed, the Memorandum of Courses can be updated after it has been initially submitted. Updates to the Memorandum of Courses are done by the student's advisor emailing the master's degree specialist in the Office of Graduate Studies specifying the changes that are to be made.
- Complete the required coursework and your thesis (if you choose Option A). Most MS degree students in our program finish within two years.
- Students must file an Application for Graduation early in the semester in which they intend to graduate. Applications for Graduation may be submitted electronically via MyRED or by contacting the Office of the University Registrar, 107 Canfield Administration Building South.
- Pass the Comprehensive Examination. For Option A students, the thesis serves as the written comprehensive exam – an oral defense of the thesis is also required. Each area of Civil and Environmental Engineering manages its own written comprehensive exam for Option B students. Note that the final examination report must be filed *at least four weeks (three weeks in summer)* prior to the date of the oral exam or by the dates shown on the Office of Graduate Studies website. If an oral examination is scheduled, this form must indicate the date and time of the examination and the names of the oral examining committee.
- Submit the final thesis if Option A has been chosen.
- Please refer to the Master's Degree Milestones webpage from Office of Graduate Studies for key milestones in MS programs (<https://graduate.unl.edu/academics/program-steps/masters-degree-steps-to-completion/>).

MS Thesis Committee

For MS students pursuing the thesis option, the thesis committee will consist of at least three members of the graduate faculty. The committee must include at least two members from the Department of Civil and Environmental Engineering.

MS Degree Requirements

In addition to the degree-specific requirements described in this section, MS students must satisfy the general departmental coursework requirements and any specialization-specific coursework requirements (including preparatory or required undergraduate courses and required core courses) outlined in Part II: General Graduate Program Policies and Requirements. Students should consult Part II in conjunction with their advisor when developing the Memorandum of Courses. The MS degree requires completion of 30 credit hours (Table 1). Option A is a thesis option and is intended for students pursuing research emphasis. Option B is a non-thesis, coursework-based option. More information about the MS degree options is available at <https://graduate.unl.edu/academics/programs/CIVE-MS/>

During the first semester of graduate study, the student is expected to work with the advisor to develop a draft Memorandum of Courses that meets the academic needs and interests of the student and complies with the MS Civil and Environmental Engineering program requirements. The draft Memorandum of Courses specifies the courses and optional project or thesis that the student will complete. The initial consideration for most students is whether to satisfy the degree requirements through Option A or B.

Masters Degree – Option A

Under this option, a student must earn a minimum of 30 semester hours of credit, consisting of 20 to 24 semester hours of regular course work, and present a thesis equivalent to 6 to 10 semester hours (Table 1). At least one-half of the required work, including thesis, must be taken in Civil and Environmental Engineering. Eight hours of credit, excluding thesis, must be earned in courses open exclusively to graduate students (900 level or 800 level without 400 or lower counterparts).

The subject of the thesis should be chosen from the candidate's field of major interest and must be approved by the student's major advisor. The thesis should reveal a capacity to carry on independent study or research and should demonstrate the student's ability to use the techniques employed in her/his field of investigation. The thesis must conform in style and form to the guidelines set forth in the Preparing a Thesis or Dissertation found on the UNL Graduate Studies website (<https://graduate.unl.edu/academics/degrees/guidelines/>). An electronic copy of the thesis and abstract must be presented for preliminary review to the Master's Degree Specialist in the Office of Graduate Studies at least two weeks (one week in the summer sessions) before the date for the Candidate's oral examination. A candidate is not eligible for the oral examination until the thesis is completed and approved by the major adviser. After the thesis has been successfully defended, it needs to be electronically submitted to the Master's Degree Specialist for a final review prior to being uploaded to digital commons.

Masters Degree – Option B

The MS degree under Option B is offered in the Department of Civil and Environmental Engineering. Under this option a student must earn a minimum of 30 credit hours coursework

(Table 1). A thesis is not required. The program may include a minor of at least 9 credit hours selected from and approved by the minor department. The program must include no fewer than 15 credit hours in coursework from the major department. At least 15 credit hours must be earned in courses open exclusively to graduate students (900 or 800 level without 400 or lower counterparts).

This option encourages a wider range of courses than is permissible under Option A. Students who have taken the master's degree under Option B and later elect to continue in graduate work for the degree of Doctor of Philosophy must give evidence of ability to carry out independent research.

Table 1. Credit requirements for MS degree in Civil and Environmental Engineering

	MS Option A	MS Option B
Minimum Total Credits Required¹	30	30
Minimum Course Credits Required¹	20-24	30
CIVE 899/999 credits required	6-10	N/A ²
Minor	Allowed	Allowed ³
Minimum CIVE Credits Required	15, including thesis hours	15
Minimum Credits from Grad Only Courses⁴	8, excluding thesis hours	15

Notes:

1. Grade requirements for graduate students are governed by the University of Nebraska–Lincoln Office of the University Registrar and Office of Graduate Studies. Students should refer to the UNL Academic Standards for Graduate Students for current policies: <https://registrar.unl.edu/academic-standards/policies/academic-standards-grad/>
2. Not applicable.
3. A minor of at least 9 credit hours from and approved by the minor department is allowed. If a student wants to pursue two minors under MS Option B, then the student will need at least 36 coursework credit hours to graduate, including a minimum of 18 credits from CIVE courses so that at least one-half of the total credits are in CIVE (major) courses; the plan must also include a minimum of 15 credits from graduate-only courses.
4. Credit in graduate-level courses is earned according to the policies of the Office of Graduate Studies. A minimum grade of “B” is required for graduate credit in 400/800-level courses within the student’s major department or area. A minimum grade of “C” or “P” (Pass) is required for graduate credit in 800-level courses taken in minor, collateral, or supporting areas. A minimum grade of “C” or “P” (Pass) is required for graduate credit in 900-level courses and in 800-level courses without 400-level counterparts.

Minors Within the CIVE MS Program

Under the MS Option A or Option B, a student may pursue a minor. Per University of Nebraska–Lincoln Office of Graduate Studies (OGS) policy, a master's degree minor must consist of at least 9 credit hours and must be taken in a department or interdepartmental area approved to offer a master's degree major. If a student pursues two minors under MS Option B, the student must complete at least 36 credit hours, with at least one-half of the total credits in CIVE (major) courses; the plan must also include at least 15 credits of graduate-only coursework. Students should refer to the OGS policy for full guidelines on credit distribution and approval procedures at <https://catalog.unl.edu/graduate-professional/policies/academic-program-requirements/>

The MS degree in Civil and Environmental Engineering is designed for flexibility, with the required courses in each specialization counting for no more than 9-12 hours of the required 20-30 hours of coursework. A minor may be added to the Option A or B MS in Civil and Environmental Engineering in a topic of interest to the student. In the past, common minors for CIVE MS students have included: statistics, business, engineering management, natural resource sciences, and community and regional planning.

The requirements for each minor vary, and students desiring a minor in a particular area should contact faculty in the department granting the minor to determine specific coursework requirements. Each minor may have requirements for the number of credit hours required as well as the specific courses that count toward the minor. Students are encouraged to identify a minor early in their academic program and work with their CIVE faculty advisor and the Civil and Environmental Engineering Graduate Chair in conjunction with faculty in the department granting the minor to determine the specific coursework requirements.

Nature and Scope of Thesis

The final master's examination is the culmination of a student's graduate education and training and reflects not only the accomplishments of the graduate student but also on the quality of the graduate program. An approved thesis that is accepted by the graduate school becomes a single-author publication and contributes to the body of knowledge of the civil and environmental engineering discipline. Approved theses are uploaded to Digital Commons, and instructions for uploading the thesis document can be found in the *Step-by-step Guide to Uploading Your Master's Thesis* document available on Digital Commons.

Examination Requirements

The purpose of the comprehensive exam is to ensure the student is familiar with the area of research to make original contributions and/or able to integrate and utilize the knowledge across the courses within the specialization.

For all specializations within Civil and Environmental Engineering, the comprehensive examination for the MS Option A student is met through the presentation of an oral thesis defense, and the comprehensive examination for MS Option B student is met through a written or oral examination. The exact format and content of the comprehensive examination for MS Option B student is decided by the graduate faculty in each specialization or department. Any change of the format and content of the examination should be approved by the majority of the graduate faculty in each specialization and Graduate Committee Chair. It is expected that the comprehensive exam for each specialization will be administered by the graduate faculty members in that specialization.

PART IV: PH.D. PROGRAM IN CIVIL AND ENVIRONMENTAL ENGINEERING

A Roadmap to Your PhD Degree

The typical path toward a doctoral degree in Civil and Environmental Engineering at the University of Nebraska-Lincoln is as follows:

- Gain admission to the program. For most of our admitted Ph.D. students, financial aid is provided in the form of a graduate assistantship.
- You will be assigned an academic advisor based on your interests. If you receive a graduate research assistantship, then your academic advisor will be the faculty member providing your assistantship support. Your advisor will be a member of the department graduate faculty and will serve as the chairperson of your doctoral supervisory committee. If you find that you wish to change advisors, you are free to do so unless your advisor is providing you with a research assistantship on a specific project. If you are supported as a graduate research assistant, but there are extenuating situations that necessitate changing advisors, you should meet with your current advisor as soon as you decide that this is necessary. As part of this meeting, you should plan to discuss how you will fulfill the obligations of your research assistantship. You and your current advisor must put in a letter signed by both you and your current advisor that fully describes how you will fulfill the obligations of your research assistantship. After meeting with your current advisor, you should also meet with your current advisor and your perspective advisor as soon as possible. You must have a letter signed by you, your current advisor and your perspective advisor stating that all have agreed to this change of advisor.
- Pass the doctoral qualifying exam. The qualifying exam must generally be taken within the first 20 hours of graduate course work. Current master's students transferring to the Ph.D. should take the qualifying exam prior to starting the Ph.D. or during the first semester in the Ph.D. program. Students may only take the qualifying exam twice. If you do not pass the exam in either attempt, you will be removed from the graduate program. Details about the qualifying exam can be found later in this handbook.
- After passing the qualifying exam, choose your Supervisory Committee and submit the Appointment of the Supervisory Committee form to Graduate Studies with a copy to the Graduate Secretary.
- Design a program of coursework with your Supervisory Committee. The Program of Studies for the Doctoral Degree should be submitted to Graduate Studies within the semester of the approval of your Supervisory Committee by Graduate Studies. Also, submit a copy of your Program of Studies to the Civil and Environmental Engineering Graduate Secretary.
- Pass the comprehensive exam, including a successful presentation of your dissertation proposal. This is done when coursework has been substantially completed. Upon passing the comprehensive exam, submit the Application for Admission to Candidacy form with a copy to the Civil and Environmental Engineering Graduate Secretary.
- Complete your research, write your dissertation, and defend it in an oral examination.
- Most Ph.D. students in Civil and Environmental Engineering at UNL should be able to finish their doctoral program in an average of approximately three to four years (beyond the M.S. degree). All requirements for the degree are to be completed by eight (8) years from the time of filing the program of studies with Graduate Studies.
- Please refer to the Doctoral Degree Milestones webpage from the Office of Graduate

Studies for key milestones in doctoral programs
(<https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion/>).

PhD Supervisory Committee

Each graduate student admitted to the doctoral program must form a supervisory committee in consultation with their supervising professor. The supervisory committee for any doctoral student should be formed prior to the completion of 36 hours of coursework and not later than the completion of 45 hours of coursework.

The committee will consist of at least four Graduate Faculty members. The majority of the committee members are expected to be Civil and Environmental Engineering Graduate Faculty members. The committee must include at least two members from the Department of Civil and Environmental Engineering. If a minor is declared, one committee member must be from the minor department. If no minor is declared, the committee must include at least one graduate faculty member from outside the Department of Civil and Environmental Engineering. The representative of the minor department on the committee may serve as the outside representative. All faculty on the supervisory committee must either be on the Graduate Faculty, or be non-Graduate Faculty approved by the department Graduate Committee, the department Graduate Chair and the Dean of Graduate Studies to perform specified Graduate Faculty duties. All Graduate Committees must have at least a two-thirds majority of Graduate Faculty on the Committee, and its chairperson must be a member of the Graduate Faculty and the CEE department. Students may request the appointment of up to one faculty member from an institution outside the University of Nebraska system to serve as a Special Member. This appointment is in addition to the required supervisory committee membership and is subject to approval by the Dean of Graduate Studies. A Special Member is a voting member and may serve as a designated reader, but may not serve as committee chair, co-chair, or outside representative. Contact the department Graduate Chair for information on the process needed to have a non- Graduate Faculty member approved to serve on your committee.

If a member of the committee other than the chair leaves the employment of the University, or retires, a replacement should be appointed. In certain circumstances where a special and needed continuing expertise is involved, and the faculty member is willing to continue serving, the departing faculty member may continue as a member or Co-Chair of the committee, with approval of the department Graduate Committee and the UNL Dean of Graduate Studies. All professors on the committee must either be on the Graduate Faculty, or be non-Graduate Faculty approved to perform specified Graduate Faculty duties.

Information on the specific roles of supervisory committee members can be found in the Graduate Bulletin. Briefly, the chair serves as the advisor and mentor to the student and assists the student with selection of other supervisory committee members, selection of courses for the students Program of Studies, and monitors the student's progress. Two members of the supervisory committee are designated as reading members (readers). These members, along with the chair, read the draft of the dissertation to determine if the student is ready to defend. One member of the committee must be external to the student's major program but serve as a graduate faculty member within the University of Nebraska system. If a faculty member from a different UNL department is serving as a student's co-chair, they cannot also serve as their outside representative.

The supervisory committee plays a central role in reviewing and approving the student's Program of Studies (POS) and in advising on its alignment with the proposed research direction. PhD students are strongly encouraged to meet regularly with their supervisory committee, either individually with committee members or as a group, to discuss progress on coursework, research activities, and professional development. At a minimum, each PhD student is encouraged to hold **one formal committee meeting per academic year** from the time the committee is formed until program completion. Additional meetings are recommended during major milestones such as review and approval of the Program of Studies (POS), preparation for comprehensive exams, and key dissertation research stages. Regular engagement ensures that the committee remains informed of the student's progress and can provide timely guidance.

Summary of Coursework, Research and Examination Requirements

The PhD degree in Civil and Environmental Engineering should ordinarily take no more than five years to complete. While individual circumstances will vary, a typical timeline will be as follows:

Year 1 (0-21 credits): Coursework and qualifying examination

Year 2 (22-42 credits): Coursework, preliminary research, supervisory committee selection, submission of Program of Studies

Year 3 (43-63 credits): Coursework, preliminary research, comprehensive exam

Year 4 (64-84 credits): Research

Year 5 (85 or more credits): Research, completion of dissertation, final oral examination

PhD Curricula

The graduate curricula consist of three elements:

- i. Learning outcomes
- ii. Coursework requirements
- iii. Examination requirements

Learning Outcomes of the PhD Program in Civil and Environmental Engineering

- *Fundamental Knowledge*: Graduates will command profound basic and applied knowledge in their specialty area within their specialization. This will be achieved through their coursework. Evaluation of this outcome will be through the qualifying exam.
- *Independent Abilities*: Graduates will have the ability to conduct a major independent and original research study that includes gathering of information, gaining an understanding of the process of academic or commercial exploitation of research results, demonstrating an understanding of contemporary research issues, effective project management, synthesis and evaluation, and appropriate dissemination of research findings. This outcome will be achieved through and evaluated using their dissertation research and publications resulting from the dissertation research.
- *Critical Thinking*: Graduates will have a profound ability to critique and synthesize literature, review results and apply knowledge gained from literature to develop new ideas, to design and evaluate scientific investigations, and to assess, interpret and understand data related to their specialty area within their specialization. Evidence of this outcome is demonstrated in and evaluated using the comprehensive exam and the dissertation research.
- *Advanced Knowledge*: Graduates will demonstrate profound mastery of the subject matter at a deeper theoretical and applied level well beyond fundamental knowledge gained in the undergraduate course sequence and the higher-level knowledge gained in the master's level

course sequence. Evidence of this will be demonstrated through the qualifying exam, the comprehensive exam and the final exam.

- *Effective Communication*: Graduates will have the ability to construct coherent arguments and articulate ideas clearly to an audience, through a variety of techniques, constructively defend research outcomes, justify their research to the profession and promote the public understanding of their research fields. This will be achieved through presentation and publication of the student's dissertation research.
- *Professional Development*: A student graduating with a doctoral degree in Civil and Environmental Engineering is expected to demonstrate interest in pursuing lifelong learning by attaining professional licenses, and obtaining professional development hours by attendance at conferences, higher educational classes, short courses and seminars, conducting classes, and publishing. Periodic surveys of our graduates will be the method used to evaluate this outcome.
- *Responsibility*: Graduates will demonstrate a high level of personal and professional responsibility in conducting ethical research, managing projects, fulfilling academic and professional commitments, and ensuring the responsible use of university and external resources.

Coursework and Research Requirements

In addition to the degree-specific doctoral requirements described in this section, PhD students must satisfy the general departmental coursework requirements and any specialization-specific coursework requirements (including preparatory or required undergraduate courses and required core courses) outlined in Part II: General Graduate Program Policies and Requirements. These requirements provide foundational disciplinary preparation for doctoral study. PhD coursework beyond these requirements, including advanced and research-focused courses, is determined in consultation with the supervisory committee and documented in the approved Program of Studies (POS).

The minimum amount of graduate credit is 90 semester hours, including a dissertation (Table 2). Up to 30 credits from a master's degree may be counted towards the PhD in Civil and Environmental Engineering. The PhD program in Civil and Environmental Engineering will normally include a minimum of 12 hours and a maximum of 55 hours of dissertation research. There is no uniform language or research tool requirement for the PhD in Civil and Environmental Engineering.

Table 2. Credit requirements for PhD degree in Civil and Environmental Engineering

	PhD
Minimum Total Credits Required¹	90
Minimum Course Credits Required¹	35
CIVE 999 credits required	12-55
Minor²	Allowed
Minimum CIVE Credits Required	N/A
Minimum Credits from Grad Only Courses³	N/A

Note: Grade requirements for graduate students are governed by the University of Nebraska–Lincoln Office of the University Registrar and Office of Graduate Studies. Students should refer to the UNL Academic Standards for Graduate Students for current policies:

<https://registrar.unl.edu/academic-standards/policies/academic-standards-grad/>

1. Grade requirements for graduate students are governed by the University of Nebraska–Lincoln Office of the University Registrar and Office of Graduate Studies. Students should refer to the UNL Academic Standards for Graduate Students for current policies: <https://registrar.unl.edu/academic-standards/policies/academic-standards-grad/>
2. A minor of at least 9 credit hours from and approved by the minor department is allowed.
3. Credit in graduate-level courses is earned according to the policies of the Office of Graduate Studies. A minimum grade of “B” is required for graduate credit in 400/800-level courses within the student’s major department or area. A minimum grade of “C” or “P” (Pass) is required for graduate credit in 800-level courses taken in minor, collateral, or supporting areas. A minimum grade of “C” or “P” (Pass) is required for graduate credit in 900-level courses and in 800-level courses without 400-level counterparts.

It is important that the coursework clearly supports and is related to the area of research that will form the basis for the dissertation. A mismatch between the coursework and the dissertation research may significantly lengthen the time to complete the PhD degree. It is important that each student works closely with their supervising professor and supervisory committee to develop a Program of Studies that not only fulfills the coursework requirements described below but also supports the student’s intended research work. A Program of Studies should be completed, approved by the student’s supervisory committee, and submitted to the Office of Graduate Studies prior to the completion of 36 hours of coursework and not later than the completion of 45 hours of coursework. Completion of a Program of Studies later than this may cause the student to be required to take additional courses beyond the typical amount of coursework for a PhD student and significantly delay the completion of the PhD degree.

Minors Within the CEE PhD Program

PhD students in the Department of Civil and Environmental Engineering are encouraged, but not required, to complete a minor in a closely related discipline that supports their dissertation research and professional goals. Any declared minor must comply with UNL Office of Graduate Studies (OGS) requirements, including approval by the minor department and appropriate representation on the doctoral supervisory committee. Commonly selected minors by PhD students in the department have included, but are not limited to, Statistics, Mathematics, Mechanical and Materials Engineering, Construction Engineering and Management, Computer Science and Engineering, Engineering Mechanics, and related fields. Students should work closely with their advisor and supervisory committee to determine whether a minor is appropriate and to ensure that coursework aligns with the approved Program of Studies.

Examination Requirements

All specializations have a qualifying exam requirement in addition to the comprehensive and final exam requirements. These exams are described below.

Qualifying Examination

The Department of Civil and Environmental Engineering gives a Ph.D. qualifying exam to doctoral students with the dual purposes of: 1) identifying any admitted doctoral students who seem not to be qualified for doctoral studies in terms of either technical competence or aptitude for research,

and 2) identifying weaknesses in student preparation that should be remedied by taking appropriate course work. It is understood that identification of an unqualified student should be rare, and that it may be considered to reflect a deficiency in the admissions process.

The qualifying exam must generally be taken within the first year of a student's PhD program (generally within the first 20 hours of graduate course work, not including transfer credits). Delays are approved only in unusual circumstances, such as a student who spends the first semester taking only or primarily undergraduate prerequisite courses or English language proficiency courses. Generally the exam is given two times per year. The graduate faculty of each specialty will announce to all students needing to take the qualifying exam the scheduled date of the qualifying exam at least four weeks in advance of the exam.

Each specialization gives a qualifying examination specific to students in that specialization. The format of all qualifying exams is as follows: The qualifying examination is generally composed of two parts. Part one of the examination evaluates the student's technical background knowledge within the specialization to identify weaknesses and should be a written exam that is at least three hours long. Part two of the examination assesses the student's technical competence, aptitude for research, and critical thinking ability and can be of the format of written and/or oral examination. The exact format and content of the two parts of the qualifying examination is decided by the graduate faculty in each specialization. Any change of the format and content of the examination should be approved by the majority of the graduate faculty in each specialization and Graduate Committee Chair. It is expected that the qualifying exam for each specialization will be administered by the graduate faculty members in that specialization. There are generally three possible outcomes for any given student who is taking the qualifying exam for the first time:

- 1) Pass,
- 2) Pass with the qualification that certain courses and/or prescribed study must be taken to remedy deficiencies in background preparation, and
- 3) Failure, with the option of retaking the exam one semester later, or at an alternate date mutually agreed upon by the student and the faculty. A failure on the second attempt is considered final, and the student is removed from the graduate program.

A decision about the student's success or failure on the qualifying exam is made based on the student's performance on the written and the oral exam (*if part of the qualifying exam*). Please note that the student has the right to appeal a termination decision related to the qualifying exam. Please refer to Section of Policy on Appealing a Dismissal in this handbook.

It is the responsibility for the advising professor to report to the Graduate Chair the outcome of the qualifying exams. This should be done by email with a carbon copy to the Graduate Secretary.

Comprehensive Examination

The comprehensive examination serves as the second major milestone in the doctoral program, intended to evaluate whether the proposed dissertation research is of sufficient merit for a PhD and to assess the student's readiness to pursue independent research in the proposed area. It generally consists of two components: a written document and an oral presentation, but this can vary. The written document typically includes a detailed description of the proposed dissertation topic,

relevant literature, research questions or hypotheses, the intended methodology, and some preliminary results. The oral presentation provides an opportunity for the student to defend their proposal and respond to questions posed by the supervisory committee. All PhD comprehensive examination requirements, procedures, timelines, and documentation must comply with the current policies and guidelines of the University of Nebraska–Lincoln Office of Graduate Studies (OGS). In the event of any discrepancy, OGS policies shall take precedence.

The timing of the comprehensive examination is determined in consultation with the supervisory committee, subdiscipline group, or department; but it usually occurs after the majority of coursework has been completed and before the majority of the research has been carried out. Students are expected to demonstrate depth of knowledge in their area of research, clarity in problem definition, and feasibility of the proposed approach.

Successful completion of both the written and oral components, along with the resolution of any provisional admission conditions, permits the supervisory committee to recommend the student for doctoral candidacy. This recommendation is formalized by submitting the Application for Admission to Candidacy to the Office of Graduate Studies, which includes documentation of the dates on which the comprehensive examination was completed.

Dissertation Requirements

The dissertation is of no fixed length. It should treat a subject from the Candidate's special field, approved by the supervisory committee. It should show the technical mastery of the field and advance or modify former knowledge, i.e., it should treat new material, or find new results, or draw new conclusions, or it should interpret old material in a new light. Each candidate for the degree shall submit with the dissertation an abstract of the same, not exceeding 350 words in length including the title. Guidelines for dissertation preparation are available on the Office of Graduate Studies Web site. For specific formatting guidelines, the Guidelines should be consulted.

Final Examination

The final examination for the doctoral degree is oral and open to members of both the University community and the public. During the dissertation presentation and general questioning all persons may be present. However, at the end of the public hearing there will be a closed questioning portion of the examination where all persons except the Candidate, doctoral supervisory committee, and invited faculty must be excused. It is given by the supervisory committee after the Candidate's studies have been completed and the dissertation accepted. The committee also determines its character and length. The examination may be devoted to the special field of the dissertation or to the Candidate's general knowledge, or it may be designed to test judgment and critical powers.

At least two weeks prior (and not more than four weeks prior) to the date scheduled for the final exam, an announcement is required to be prepared by the Candidate and sent to Graduate Secretary of the department. This announcement should include: the dissertation title; the name of the Candidate and the Chair/Co-Chair of the Candidate's committee; a short (approximately 250 word) abstract; and the time, date and location of the oral examination. This announcement is sent to the Civil and Environmental Engineering Graduate Chair and copied to the Graduate Secretary for dissemination to all CEE faculty and students.

The final oral examination for the PhD will not be scheduled unless a majority of the supervisory committee, including the Chair (and Co-Chair, if applicable), are available for the examination. Exceptions may be made only by permission of the Dean of Graduate Studies. In any event, the supervisor of the dissertation and the two designated dissertation readers must have seen and approved the completed dissertation before the examination will be scheduled. An Application for Final Oral Exam must be filed at least two weeks prior to the scheduled defense. The advisor and two readers must sign the form prior to submission.

The committee reports the results of the final oral examination to the Office of Graduate Studies. In the event that members of an oral examining committee are not unanimous regarding passing a Candidate, the student is to be approved for the degree if only one examiner dissents. However, in each case, the dissenting member of the committee will be expected to file a letter of explanation in the Office of Graduate Studies.

If a student fails to pass the final oral examination for an advanced degree, his/her committee must file a report on the failure in the Office of Graduate Studies and indicate what the student must do before taking another examination. Another examination may not be held during the same semester or the same summer session in which the student failed. Please note that the student has the right to appeal a termination decision related to the final examination. Please refer to Section of Policy on Appealing a Dismissal in this handbook.

PART V: ASSISTANTSHIPS AND OTHER FINANCIAL SUPPORT

At the University of Nebraska-Lincoln, Graduate Research Assistantships (GRAs) and Graduate Teaching Assistantships (GTAs) may be available to qualified students. Students funded with fellowships and as GRAs are typically Option A MS students or PhD students. Student researchers may also be funded as GTAs for a portion of their MS and/or PhD work. As a matter of professional development and preparation for academic careers, PhD students are typically *required* to serve as GTAs for at least one course.

International students that have not completed a previous degree in the United States are *required* to *satisfactorily complete* the Institute for International Teaching Assistantships workshop prior to assuming the role, responsibilities, and benefits of a graduate teaching assistant. More information is available here: <http://www.unl.edu/gradstudies/current/ita>

It is recommended that international PhD students complete the Institute for International Teaching Assistants (IITA) training as soon as possible upon arrival to facilitate later appointments as GTAs and completion of their PhD program of study. A description of each type of assistantship and the criteria for selection are provided in the following sections.

Graduate Research Assistantships

Graduate research assistantships are available for graduate study in Civil and Environmental Engineering. These assistantships are provided from an external grant or departmental or university funds to enable a student to work towards the advanced degree. Students receiving research assistantships may be expected to provide their academic adviser with a written report of their academic progress at the conclusion of the period for which the research assistantship is awarded. Work required by the graduate research assistantship that is not directly related to the student's own program shall not exceed 13-20 hours per week (.33 to .49 FTE). Decisions on graduate research assistantships are made on a case-by-case basis by individual faculty members. Graduate research assistants are typically expected to produce a thesis or dissertation, and also typically at least one peer-reviewed journal article during a MS and three peer-reviewed journal articles during a PhD program. Production and presentation of papers and/or posters for national and international conferences and symposia are also commonly expected during a research-based graduate program.

Students supported by Graduate Research Assistantships (GRAs) should understand that assigned research tasks may not always directly align with their thesis or dissertation research. These tasks are intended to provide valuable research experience, technical skills, and professional development consistent with the goals of graduate education. Continued disbursement of a GRA is contingent upon satisfactory academic progress and acceptable performance of research duties. Renewal of assistantship funding is not guaranteed and is subject to the availability of research funds and the faculty advisor's evaluation of performance and the student's progress toward degree completion.

Graduate Teaching Assistantships

A teaching assistantship provides a stipend to a student who is typically required to spend 13-20 hours per week (.33 to .49 FTE) during the academic year assisting in the teaching program of a department. The teaching assistant is expected to continue working towards the advanced degree

while being a teaching assistant. Teaching assistantship responsibilities may not be directly related to a student's thesis or dissertation research but are designed to help students develop instructional, communication, leadership, and other professional skills important for their career development.

Additional resources for graduate teaching assistants are available at: <https://graduate.unl.edu/professional-development/teaching-development/teaching-resources/>

Graduate assistants may be expected to provide their academic adviser with a written report of their academic progress at the conclusion of the period for which the teaching assistantship is awarded.

Because of the potential for the exploitation of graduate students, any assignment of responsibilities, such as teaching a course, must be associated with a fair and reasonable compensation. This principle precludes a graduate student from "volunteering" for any significant service to the department without an appropriate stipend.

In the Department of Civil and Environmental Engineering, selection of students to receive graduate teaching assistantships is made by the Department Chair in consultation with the department faculty. Selection of students to serve as graduate teaching assistants is typically made in the spring for the following academic year. Continued disbursement of a GTA depends on satisfactory academic progress and effective performance of assigned instructional responsibilities. Reappointment is not guaranteed and may depend on departmental instructional needs, funding availability, and demonstrated performance as a teaching assistant.

Other Fellowship and Scholarship Opportunities

Other UNL or externally funded scholarships or fellowships may be available to qualified students. Current information about UNL and externally funded fellowships are available at: <https://graduate.unl.edu/funding/>

Students holding fellowships receive advising similarly to those holding assistantships. Fellowship recipients are selected based on excellence of merit and are implicitly expected to be productive in their work through self-motivation. However, continued disbursements from the fellowship during the award period carry no contingency for time or productivity. No additional work is required of a fellow commensurate with an equivalent research assistantship stipend.

Academic Leave of Absence

An Academic Leave of Absence may be granted to students for illness or injury, to provide care or assistance for family and dependents, to meet military service obligations, or for other personal reasons. Current information about UNL academic leave for graduate students is available at OGS webpage: <https://graduate.unl.edu/academics/academic-leave/>

Vacation Policy for Students on Assistantships

All vacations and leaves must be coordinated in advance and approval obtained from student's graduate advisor. There are times when a student's presence is essential to the core research responsibilities. Conflicts can be avoided by careful and advanced planning. Instructional breaks such as Christmas, Thanksgiving, and Spring Break are work periods, except for days declared as

official University holidays. When going on vacation or leave, a telephone number and/or address should always be left with your graduate advisor in case of emergency.

PART VI: ACADEMIC INTEGRITY AND PROFESSIONAL DEVELOPMENT

Graduate Student Evaluation

The Civil and Environmental Engineering Graduate Faculty is committed to UNL's Guidelines for Good Practice in Graduate Education, available at:

<https://catalog.unl.edu/graduate-professional/policies/governance-and-responsibilities/guidelines-for-good-practice/>

This document states that “*Graduate student progress toward educational goals at the University of Nebraska is directed and evaluated by an advisor, the relevant graduate committee, and the student's supervisory committee.*” It also states that faculty “*Not impede a graduate student's progress and completion of his/her degree in order to benefit from the student's proficiency as a teaching or research assistant.*”

All graduate students in the Department of Civil and Environmental Engineering will undergo a yearly evaluation with their advisor, with the evaluation form to be filed with the Graduate Secretary. The annual review forms for MS and PhD students are provided in Appendix C and Appendix D. The Graduate Chair will review the annual review forms. If unsatisfactory progress is noted by the student or their advisor, the Graduate Chair may convene a meeting of the student, the graduate advisor, the Graduate Chair and/or the Department Chair to determine how the Department can address the situation. In addition, the outcomes of the annual evaluation will be used in selection of future GTA and GRA appointments.

Failure to complete the annual evaluation may result in suspension or discontinuation of an existing GRA or GTA appointment. In addition to the required annual evaluation, a *voluntary Evaluation and Improvement Plan* may be initiated by the student or advisor at any time to provide structured feedback and identify actionable steps for improvement. The Graduate Chair may also initiate an improvement plan when significant concerns arise regarding academic progress, communication, or assistantship performance.

Annual Evaluation (Required)

All graduate students in the Department of Civil and Environmental Engineering are subject to a year-by-year evaluation to assess academic progress, research performance (if applicable), and fulfillment of assistantship responsibilities. This is done at the end of the academic year, defined as the end of the Spring semester. The annual evaluation is conducted by the student's advisor, with review by the Graduate Chair, and is documented using the department's approved evaluation forms. Students who are determined to be meeting expectations may continue in good standing and remain eligible for assistantship renewal, subject to funding availability. If a student is found to be not meeting expectations, the advisor, may require the development of a written Evaluation and Improvement Plan (EIP) that identifies specific concerns, expectations, timelines, and benchmarks for satisfactory progress. Failure to demonstrate improvement within the agreed timeframe may result in additional actions consistent with departmental and UNL Office of Graduate Studies policies. When appropriate, the Graduate Chair may meet with the student and advisor to provide guidance, help clarify expectations, facilitate communication, or assist in resolving concerns related to academic progress or advising.

Evaluation and Improvement Plan

In addition to the required annual evaluation, an Evaluation and Improvement Plan may be initiated at any time by either the student or the advisor. The purpose of this plan is to proactively address concerns related to academic progress, research performance, communication, or assistantship responsibilities before they escalate. A template of the Evaluation and Improvement Plan is provided in Appendix E. An Evaluation and Improvement Plan should clearly identify areas of concern, specific expectations, recommended actions, and a reasonable timeline for review. The plan is intended to support student success and professional development and does not, by itself, constitute disciplinary action. When appropriate, the Graduate Chair may be consulted by either party to provide guidance and ensure consistency with departmental and UNL policies. When appropriate, the Graduate Chair may meet with the student and advisor to provide guidance, help clarify expectations, facilitate communication, or assist in resolving concerns related to academic progress or advising.

Grading of Thesis and Dissertation Hours

Thesis and dissertation hours are graded on an XP/IP basis with an IP grade indicating that satisfactory progress was made during the semester, while an XP grade indicates that unsatisfactory progress was made during the semester. The decision regarding whether to assign a grade of XP or IP to a student registered for thesis or dissertation hours rests solely with the graduate faculty advisor and is based on research expectations discussed with the student. It is the responsibility of the CEE graduate faculty advisor to ensure that XP/IP grades for thesis/dissertation hours and the student's annual evaluation are consistent. If 2 consecutive XP grades are given to a Civil and Environmental Engineering graduate student, the Graduate Chair will contact the graduate student, faculty advisor, and Department Chair, requesting a meeting to discuss the student's performance.

Final grades for thesis (CIVE 899) and dissertation (CIVE 999) hours are generally assigned as Pass/No Pass (P/N) or letter grade upon completion of the final examination and submission of the approved thesis or dissertation.

Policy on Incompletes

An Incomplete (I) grade is a temporary grade assigned only in cases of significant extenuating circumstances and should not be used routinely to extend coursework deadlines. If a student accumulates more than 3 'incomplete' grades in courses other than thesis and dissertation hours, the graduate advisor will meet with the student to discuss the student's performance. Any concerns raised in the meeting should be included in the student's annual evaluation form. If at the end of the additional semester the student still has more than 3 'incomplete' grades, the Graduate Chair will contact the graduate student, faculty advisor, and Department Chair, requesting a meeting to discuss the student's performance. The outcome of this meeting may include the development of an Evaluation and Improvement Plan with specific actions and timelines, or other actions consistent with departmental and UNL Office of Graduate Studies policies.

Policy on Appealing a Dismissal

A student can appeal a decision on dismissal. The university has established appeal processes for student appealing process. <https://registrar.unl.edu/academic-standards/academic-policies/appeal-procedure-academic-dismissal/>

Professional Development

Graduate students are encouraged to discuss discipline-specific professional development questions, such as joining professional societies and the job application process with their graduate advisor and supervisory committee members.

Graduate students are encouraged to present their research findings at the annual Graduate Student Research Poster Fair hosted by the UNL Office of Research. The Department of Civil and Environmental Engineering offers travel grants to support Civil and Environmental Engineering graduate students to present their research at professional conferences. The College of Engineering also maintains a Graduate Student Conference Travel Grant program. <https://newsroom.unl.edu/announce/unlcive/8752/50419>

Advanced graduate students are encouraged to take advantage of a series of professional development opportunities provided by Career Services. <https://careers.unl.edu/about/>. For advanced doctoral students interested in pursuing a faculty position, graduate studies offer a Preparing Future Faculty program. <https://graduate.unl.edu/preparing-future-faculty/>. The Office of Research and Innovation offers an annual grant writing seminar: <https://research.unl.edu/research-education/grant-writing-seminar/>

University and College Awards

The Office of Graduate Studies offers outstanding thesis and dissertation awards to recognize outstanding achievement of graduate students. In addition, College of Engineering awards and university awards are available, and details can be found at <https://graduate.unl.edu/about/awards/> and <http://engineering.unl.edu/graduate-programs/graduate-student-recognition/>

Responsible Use of University Resources

All graduate students are expected to use all computing resources responsibly and are expected to adhere to policies as set forth by the university and laws and regulations of federal, state and local government. These policies pertain to all computers, printers, networks, Internet connections, and communication systems transmitting voice, data, or video information owned or leased by the University of Nebraska-Lincoln. Appropriate use is always ethical, reflects academic honesty, the security and confidentiality of personal information, and shows restraint in the consumption of shared resources. Current UNL computer use policies are available at <https://www.unl.edu/computer-use-policies/>.

The Department of Civil and Environmental Engineering owns and maintains equipment for teaching and research. It is the responsibility of each graduate student to be trained in proper use and maintenance of this equipment, which may require safety and hand-on training in coordination with the laboratory manager, faculty member, advanced graduate students, online program, or other. Individual laboratories are liable for repair and replacement costs if their personnel misuse equipment.

Appendix A NCEES Engineering Education Standard: US Licensure Education Requirement for Students Who Do Not Have an ABET-Accredited Degree

Disclaimer: This section is not maintained regularly. Please refer to the NCEES website to confirm the language in the most current version of the Engineering Education Standard. The information provided in this section is intended to be general guidance. It is the student's responsibility to confirm current specific rules and policies with the Board in the states or jurisdictions where the student wants to be licensed.

To become a licensed professional engineer in the United States, the most common pathway for those educated at UNL CEE is through NCEES (National Council of Examiners for Engineering and Surveying). Three steps must be completed: Education, Experience, and Exams. This section discusses the Education step. More information on the other steps can be found by searching online for NCEES.org and Licensure.

In the United States, each state and jurisdiction (e.g., Washington, DC, certain territories) has its own engineering licensing board and specific rules. The rules related to education are generally similar, with some minor local variations. For example, engineering licensing boards generally require P.E. candidates to have a bachelor's degree from an EAC/ABET-accredited program.

ABET degree (<https://www.abet.org/accreditation/find-programs/>). ABET allows each degree program to accredit only one degree level, and most accredit the BS degree. Earning a graduate degree from a program at a different ABET accreditation level is not considered an ABET-accredited degree by NCEES and most Boards. UNL CEE accredits its degrees at the BS level.

For students without an ABET-accredited Engineering degree, the most common pathway to fulfill the Education step is to undergo a Credentials Evaluation through NCEES. This evaluation is to confirm that your cumulative education meets the NCEES Engineering Education Standard. For the standard, all college coursework from the undergraduate and graduate levels can be considered. Pay special attention to the Credential Evaluation Policies, which create problems for some students. For more information on these topics, search NCEES.org and Credential Evaluation.

Note that the requirements for coursework and for deficiency classes for each MS and Ph.D. specialization in the CEE graduate program are not designed to automatically meet the engineering education standard. In some cases, a student may need to complete additional coursework. It is the student's responsibility to understand these requirements.

Generally, international students with a non-ABET-accredited degree will meet the NCEES Engineering Education Standard requirements for Engineering hours. Occasionally, they will not meet the requirements for Math and Science hours. Students are encouraged to review the Credentials requirements policies before making decisions concerning the courses they will complete during their graduate program.

Students without an Engineering undergraduate degree will need to pay special attention to the NCEES Engineering Education policies and be intentional in selecting courses. Be careful to take sufficient classes with Engineering class codes, and note the restrictions on thesis, dissertation, independent study, and practicum credit hours.

All students will want to maintain records of syllabi of all courses they complete while a student (at all levels, both within the US and internationally).

NCEES will not perform an Engineering Education Standard evaluation prior to completing an US Engineering graduate degree, unless a student petitions a State Board to request the evaluation in advance of graduation. Some students are uncertain if their courses will meet the standard and want official feedback before graduation (so they can add a course). In specific cases, the Nebraska Board approves such petitions. Typically, the time from filing the petition with the Nebraska Board to receiving feedback from NCEES is 4 to 6 months.

Another common mistake among Ph.D. students is failing to pass the FE exam. Some State Boards will exempt those with a Ph.D. in Engineering, but others will not. It is recommended that a student sit for and pass the FE, unless they know that the State Board in all states they want to be licensed in for the first part of their career does not require it. Nebraska requires the FE. Passing the PE exam alone will not meet the licensure requirements for some State Boards.

Last updated: August 6, 2026

Appendix B Mutual Expectations of Mentors and Mentees

The Civil and Environmental Engineering Graduate Faculty is committed to UNL's Guidelines for Good Practice in Graduate Education, available at: <https://catalog.unl.edu/graduate-professional/graduate/general/guidelines/> This document states that "Graduate student progress toward educational goals at the University of Nebraska is directed and evaluated by an advisor, the relevant graduate committee, and the student's supervisory committee." It also states that faculty should "Not impede a graduate student's progress and completion of his/her degree in order to benefit from the student's proficiency as a teaching or research assistant."

The word "Mentor" in this document refers to all faculty in the Department of Civil and Environmental Engineering. The word "Mentee" refers to all graduate students in the department. Language about research is pertinent to graduate students that conduct research activities.

Expectations of Mentors	Expectations of Mentees
<i>Respect</i>	
• Respect students as a person and a professional • Build an environment for students with varying backgrounds • Ensure students feel comfortable communicating and expressing their concerns • Respect students' time and recognize their additional responsibilities	• Respect faculty members as a mentor and a professional • Understand that students hold the primary responsibility to complete all degree requirements. • Recognize the value of their mentor's time and responsibilities inside and outside the University
<i>Communication</i>	
• Articulate the expectations and timelines required to make progress toward degree programs. • Communicate about the expectations on work hours, vacations, and leaves as research and teaching assistants, if applicable. • Schedule regular meetings with students at mutually agreed upon times. • Provide timely feedback on students' progress toward degree completion, with respect to course work, research or creative activities, and teaching performance. • Offer constructive criticisms and provide suggestions if student progress does not meet expectations.	• Take initiatives to seek guidance from mentor on course work and research activities • Attend regular meetings with mentors at mutually agreed upon times. • Update mentors regularly on academic and research progress. • Respond to feedback and communications from mentor
<i>Commitment</i>	
• Engage and guide students in developing their graduate programs, including course selection, research responsibilities, and timelines.	• Understand the expectations and requirements for the degree programs, research productivity, and GRA/GTA responsibilities

• Direct students to policies and resources relevant to graduate education on campus (e.g., milestones websites). • Support students' success in their course work, and recognize students' need to spend extra time on courses during exam periods. • Advise students on their thesis or dissertation work. • Help students develop professional communication skills and practice professional integrity.	• Follow the degree milestones webpages and submit the forms on a timely manner (e.g., Memorandum of Courses, Program of Studies, Appointment of the Supervisory Committee). • Complete mutually agreed upon research activities within mutually agreed upon timeframe, recognizing the need may arise for occasional demands for intense workloads to meet project objectives and important deadlines. • Produce a thesis or dissertation, publish peer-reviewed journal articles based on their research work, and present works at professional conferences.
<i>Career Development</i>	
• Encourage students to attend and present at professional conferences. Provide funding for students' conference registration and travel whenever possible when allowable from project funds. • Promote students and student works, such as nominating them for awards, and writing reference letters when appropriate. • Help students establish their professional network • Discuss career development with students, such as completing Independent Development Plans	• Seek professional development advice from mentors. • Strive to become independent professionals and researchers as students advance in their programs.
<i>Shared Responsibility</i>	
• Maintain a clean, safe work environment for themselves and others • Adhere to lab and field safety protocols when conducting research work • Practice professional ethics in academic and research activities	

Appendix C Annual Review Form for MS students
Civil and Environmental Engineering
University of Nebraska-Lincoln
Annual Progress Report for Master's Students – Due 1 week after the Spring semester

Student's Name _____

Academic Advisor _____

Portion Completed by the Student

Academic Progress

A copy of your unofficial transcript and your memorandum of courses should be attached to this report.

Date of entrance into program* _____ Expected completion date _____

*If admitted under provisional status, date provisional status removed _____

Date of most recent contact with your academic advisor _____

- ☐ Option A (thesis option)
☐ Option B (non-thesis option)

For Option A students:

Month & year or expected month & year of submitting Memorandum of Courses _____
Month & year or expected month & year of thesis proposal approval, if applicable _____
Month & year or expected month & year of thesis defense _____

For Option B students:

Month & year or expected month & year of submitting Memorandum of Courses _____
Month & year or expected month & year of Comprehensive Exam _____

Credit hours completed (as of the end of the Spring semester) _____
Current GPA _____ Number of credits with a grade of B- or lower _____

Professional Performance and Potential

The student should prepare and attach the following information:

1. Current year's professional goal statement noting both academic and career goals
2. Next year's professional goal statement noting both academic and career goals
3. Resume/Vitae which may include the following
 - a. Education background
 - b. Employment background
 - c. Papers published or submitted
 - d. Presentations at professional conferences
 - e. Other relevant information

Comment briefly on your progress in achieving your academic goals during the past year. Note areas in which you are experiencing any difficulty.

Comment briefly on your progress toward achieving your career goals during the past year. If you feel you are not making progress, explain why.

Civil and Environmental Engineering
University of Nebraska-Lincoln
Annual Progress Report for Master's Students – Due 1 week after the Spring semester

Student's Name _____

Academic Advisor _____

Portion Completed by the Academic Advisor **Academic
Progress**

1. Has the student made acceptable progress during the evaluation period? Please comment below.

2. Please comment on the overall academic performance of the student, including teaching assistant experiences, if applicable (if the student served as a GTA for another faculty member, that faculty member's input on GTA performance should be included. Attach this year's departmental GTA review forms.)

Student Your signature below indicates that you have discussed the contents of this progress report with your academic advisor.

Student _____ Date _____

Academic Advisor Your signature below indicates that you have discussed the contents of this progress report with the student.

Academic Advisor _____ Date _____

Graduate Chair Your signature below indicates that you have received this progress report and have asked for it to be filed in the student's file.

Graduate Chair _____ Date _____

When the academic advisor and student have reviewed and signed this progress report and submitted it to the Graduate Chair, copies of the report must be given to the student and academic advisor. The original progress report

must be placed in the student's file in the departmental office. Students have the option to discuss any part of the academic advisor's evaluation with the department graduate committee.

Appendix D Annual Review Form for PhD students
Civil and Environmental Engineering
University of Nebraska-Lincoln
Annual Progress Report for PhD Students – Due 1 week after the Spring semester

Student's Name _____

Academic Advisor _____

Portion Completed by the Student

Academic Progress

A copy of your unofficial transcript and your program of courses should be attached to this report.

Date of entrance into program* _____ Expected completion date _____

*If admitted under provisional status, date provisional status removed _____

Date of most recent contact with your academic advisor _____

Month & year or expected month & year of qualifying exam _____ Passed? _____

Month & year or expected month & year of submitting Appointment of Supervisory Committee Form _____

Month & year or expected month & year of submitting Program of Studies _____

Month & year or expected month & year of comprehensive exam _____ Passed? _____ Month

& year or expected month & year of final oral exam _____

Credit hours completed (as of the end of the Spring semester) _____

Current GPA _____ Number of credits with a grade of B- or lower _____

Professional Performance and Potential

The student should prepare and attach the following information:

1. Current year's professional goal statement noting both academic and career goals
2. Next year's professional goal statement noting both academic and career goals
3. Resume/Vitae which may include the following
 - a. Education background
 - b. Employment background
 - c. Papers published or submitted taught, grading, mentoring)
 - d. Presentations at professional conferences
 - e. Research participation
 - f. Service participation
 - g. Education participation (e.g., courses
 - h. Other

Comment briefly on your progress in achieving your academic goals during the past year. Note areas in which you are experiencing any difficulty.

Comment briefly on your progress toward achieving your career goals during the past year. If you feel you are not making progress, explain why.

Civil and Environmental Engineering
University of Nebraska-Lincoln
Annual Progress Report for PhD Students – Due 1 week after the Spring semester

Student's Name _____

Academic Advisor _____

Portion Completed by the Academic Advisor

Academic Progress

1. Has the student made acceptable progress during the evaluation period? Please comment below.

2. Please comment on the overall academic performance of the student, including teaching assistant experiences, if applicable (if the student served as a GTA for another faculty member, that faculty member's input on GTA performance should be included. Attach this year's departmental GTA review forms.)

Student Your signature below indicates that you have discussed the contents of this progress report with your academic advisor.

Student _____ Date _____

Academic Advisor Your signature below indicates that you have discussed the contents of this progress report with the student.

Academic Advisor _____ Date _____

Graduate Chair Your signature below indicates that you have received this progress report and have asked for it to be filed in the student's file.

Graduate Chair _____ Date _____

When the academic advisor and student have reviewed and signed this progress report and submitted it to the Graduate Chair, copies of the report must be given to the student and academic advisor. The original progress report must be placed in the student's file in the departmental office. Students have the option to discuss any part of the academic advisor's evaluation with the department graduate committee.

Appendix E Evaluation and Improvement Plan Template

Purpose

The Evaluation and Improvement Plan (EIP) is a structured, supportive tool designed to document specific concerns related to a graduate student's academic progress, research performance, communication, or assistantship responsibilities and to outline clear expectations and benchmarks for improvement. The plan is intended to support student success and timely progress toward degree completion.

An Evaluation and Improvement Plan may be initiated during the required **annual evaluation** or at any time by the student or advisor. The plan does not, by itself, constitute disciplinary action and is intended as a constructive mechanism to promote clarity, support, and continued progress.

Student Information

Student Name:	_____	NUID:	_____
Degree Program:	☐ MS ☐ PhD	Specialization:	_____
Advisor:	_____	Date Plan Initiated:	_____
Type of Plan:	☐ Required (Annual Evaluation) ☐ Voluntary		

Summary of Concerns

(Briefly describe the specific areas of concern that prompted this plan. Concerns should be factual, observable, and related to academic, research, communication, or assistantship responsibilities.)

Expectations for Improvement

(List clear, specific expectations the student must meet. Expectations should be achievable, measurable where possible, and aligned with degree requirements.)

Example categories (as applicable):

- Coursework or academic performance
- Research progress or milestones
- Communication and meeting expectations
- Assistantship responsibilities
- Professional conduct

Action Steps and Responsibilities

(Identify recommended or required actions, who is responsible, and any resources to be used; Add additional rows as needed)

Action Item	Responsible Party	Target Date

Timeline and Review Plan

Plan Start Date: _____

Expected Review Date(s): _____

Final Evaluation Date: _____

Progress toward the expectations outlined above will be reviewed according to this timeline. Adjustments to the plan may be made by mutual agreement, as appropriate, to account for progress, changing circumstances, or clarified expectations.

Possible Outcomes

(For required plans only; optional section)

Successful completion of this plan may result in a return to good standing. If satisfactory improvement is not demonstrated within the specified timeframe, additional actions may be considered in accordance with departmental and UNL Office of Graduate Studies policies. Any such actions will follow established procedures and be communicated clearly.

Acknowledgment

This plan has been discussed with the student and advisor. Signing below indicates acknowledgment of the plan and understanding of expectations; it does not imply agreement with all elements or waive the opportunity for continued discussion or clarification.

Student Signature: _____

Date: _____

Advisor Signature: _____

Date: _____

Graduate Chair (if applicable): _____

Date: _____