

**Dual Degree Program:
Master of Science–Civil Engineering
(Transportation, Water Resources, and Environmental Specializations)
and
Master of Community and Regional Planning Degrees
University of Nebraska–Lincoln**

Established: 1998

Updated: November 2015

A. Introduction

The increasing complexity of issues relating to physical, economic, and social well-being in the world today is requiring broader knowledge and greater depth of understanding by decision makers who are attempting to resolve those issues and thereby improve the quality of life. Professionals in the fields of civil engineering and planning are commonly called upon to assist in the definition and resolution of these complex issues.

Persons who are educated both in civil engineering and in planning are uniquely equipped to understand many of these difficult problems. They are better prepared than many other professionals to identify the most appropriate technical, institutional, and policy alternatives that address such problems. Historically, there has been a strong tradition of interdisciplinary cross-over in the types of problems addressed by civil engineers and planners. In fact, many practitioners provide individually, or as members of interdisciplinary teams and firms, professional services in both fields.

Based upon the reality of continually expanding interdisciplinary professional challenges, responsibilities, and opportunities, this dual degree program offers a means by which students may concurrently complete requirements for both the Master of Science in Civil Engineering (MS–CE) and the Master of Community and Regional Planning (MCRP) degrees in an estimated two-and-one-half years of full-time study.

This dual degree program utilizes the frameworks and faculties of existing academic degree programs at the University of Nebraska-Lincoln. This program draws upon the existing required core and elective courses in the MCRP degree program, as well as existing courses in the transportation, water resources, or environmental engineering specializations of the MS–CE degree program.

The intent of this dual degree program is to prepare students for a variety of professional roles in which the knowledge, skills, and background of both the planner and civil engineer are important. These roles include, but are not limited to, professional work in the following areas:

- city planning and management
- land use planning and growth management
- subdivision planning and site design
- land development
- transportation planning
- traffic engineering
- environmental engineering
- environmental planning
- water resources engineering
- water resources planning

Persons completing this dual degree program will have the opportunity to attain professional status in either or both of the planning and engineering professions. Planner/engineers find challenging professional positions in a wide variety of private sector and non-profit organizations, in all levels of government, as well as international settings.

B. Dual Degree Program Requirements

The MS–CE/MCRP Dual Degree Program requires the following:

1. Participants entering the dual degree program will have completed the UNL Bachelor of Science in Civil Engineering or equivalent degree program.
2. Participants must satisfy all entrance requirements for each of the two master’s degree programs.
3. Applications to the MS–CE and MCRP degree programs may be filed simultaneously before enrollment in either program. Alternatively, a student beginning either the MS–CE or the MCRP degree program may declare an interest in the dual degree program and subsequently submit an application to the other degree program, but prior to completion of no more than 24 credit hours in the degree program in which he or she initially enrolled.
4. Students in the dual degree program select one of three specializations in Civil Engineering: Transportation Engineering, Water Resources Engineering, or Environmental Engineering.
5. Students pursuing the dual degree program shall have a faculty academic advisor in the Department of Civil Engineering and a faculty academic advisor in the Community and Regional Planning program. The faculty advisors and student will work together to determine the details of a program of studies—defined generally in the “Course Requirements” section below—that satisfies the requirements of both degrees and accommodates goals of the student.
6. Students pursuing the dual degree program shall select either a joint engineering/planning master’s thesis or a joint engineering/planning professional project to culminate the dual degree program. Faculty advisory committees for such joint theses or projects shall consist of four members, including two each from the Department of Civil Engineering and the Community and Regional Planning program, with one co-chair from each discipline. The advisory committee for a professional project shall also have a non-faculty, nonvoting, practicing professional or project client representative who must be approved by the advisory committee co-chairs.
7. Participants in the dual degree program will be awarded both the Master of Science–Civil Engineering and the Master of Community and Regional Planning degrees simultaneously upon completion of all requirements.
8. If, while enrolled in the MS–CE/MCRP Dual Degree Program, a student decides to complete only one of the two degrees, all the normal requirements for the selected degree program that the student wishes to complete must be satisfied.
9. Other than as specified in this program description, participants in the MS–CE/MCRP Dual Degree Program must comply with all requirements for students in the University of Nebraska Graduate College.

C. Course Requirements

Courses required for students pursuing the MS-CE/MCRP Dual Degree Program are as follows:

1. MCRP Prerequisite Courses:

These courses may be completed either at the undergraduate or graduate level.

Statistics	3
Economics	3
Sociology (or equivalent)	3

2. Principal Graduate-Level Courses:

2.1 **Civil Engineering** (students select one of the three following CE specializations)

2.1.1 **Transportation Engineering Specialization**

2.1.1.1 **Basic Required Courses:**

Students must either take these courses or show that they have taken equivalent courses in their undergraduate program or in another graduate program:

CIVE 861–Urban Transportation Planning	3
CIVE 862–Highway Design	3
CIVE 863–Traffic Engineering	3

2.1.1.2 **Required Core Courses (10 credit hours):**

CIVE 864–Analysis & Estimation of Transportation Demand	3
CIVE 865–Highway Geometries	3
CIVE 866–Transportation Characteristics	3
CIVE 989–Transportation Seminar	1
	<u>10</u>

2.1.1.3 **Directed Electives in Civil Engineering (12 credit hours):**

At least one of the following courses is to be selected through individual advising, based on previous coursework related to the basic required courses:

CIVE 867–Transportation Safety Engineering	3
CIVE 868–Airport Planning & Design	3
CIVE 869–Computer-aided Interchange Design	3
CIVE 961–Mass Transit Systems	3
CIVE 962–GIS in Transportation	3
CIVE 963–Highway Safety Data Analysis	3
CIVE 964–Theory of Traffic Flow	3
CIVE 965–Traffic Control Systems	3
CIVE 966–Transportation Planning & Economics	3
CIVE 967–Analysis & Design of Transportation Supply Systems	3
	<u>12</u>

Total Transportation Engineering Principal Course Credit Hours:

22

2.1.2 Water Resources Engineering Specialization

2.1.2.1 Required Core Courses (10 credit hours):

CIVE 854—Hydraulic Engineering	3
CIVE 856—Surface Water Hydrology	3
CIVE 858—Groundwater Engineering	3
ENVE 990—Seminar in Environmental Engineering	<u>1</u>
	10

2.1.2.2 Directed Electives in Civil Engineering (9 credit hours):

Three of the following courses are selected through individual advising:

CIVE 819—Flow Systems Design	3
CIVE 830—Fundamentals of Water Quality Modeling	3
CIVE 852—Water Resources Development	3
CIVE 855— Nonpoint Source Pollution Control Engineering	3
CIVE 875—Water Quality Strategy	3
CIVE 952—Water Resources Planning	3
CIVE 954—Advanced Hydraulics	3
CIVE 958—Groundwater Mechanics	3
CIVE 898—Special Topics	Variable
CIVE 916—Interdisciplinary Seminar in Engineering: Economic and Legal Aspects of Water Resources Systems	3
CIVE 915—Water Resources Engineering	<u>3</u>
	9

2.1.2.3 Directed Elective in Engineering (3 credit hours):

Specific course is selected through individual advising.

Directed Elective in Engineering	<u>3</u>
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Total Water Resources Engineering Principal Course Credit Hours: 22

2.1.3 Environmental Engineering Specialization

2.1.3.1 Required Core Courses (10 credit hours):

CIVE 823—Physical Chemical Treatment Processes	3
CIVE 828—Environmental Engineering Chemistry	3
CIVE 829—Biological Treatment Processes	3
ENVE 990—Seminar in Environmental Engineering	<u>1</u>
	10

2.1.3.2 Directed Electives in Civil Engineering (9 credit hours):

Three of the following courses are selected through individual advising. Other courses in CIVE may be substituted with approval.

CIVE 821—Hazardous Waste Management and Treatment	3
CIVE 822—Pollution Prevention: Principles and Practices	3
CIVE 824—Solid Waste Management Engineering	3
CIVE 826—Design of Water Treatment Facilities	3
CIVE 827—Design of Wastewater Treatment and Disposal Facilities	3
CIVE 830—Fundamentals of Water Quality Modeling	3
CIVE 831—Small Treatment Systems	3
CIVE 898—Special Topics	<u>3</u>
	9

2.1.3.3 Directed Elective in Engineering (3 credit hours):

Specific course is selected through individual advising.

Directed Elective in Engineering	<u>3</u>
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Total Environmental Engineering Principal Course Credit Hours: 22

2.2 Community and Regional Planning

2.2.1 Required Core Courses (24 credit hours):

CRPL 800—Introduction to Planning	3
CRPL 802—Planning Theory	3
CRPL 804—Legal Aspects of Planning	3
CRPL 810—Qualitative Techniques for Planners	3
CRPL 830—Planning with GIS	3
CRPL 840—Planning Methods and Analysis	3
CRPL 900—Professional Planning Practice	3
CRPL 990—Planning Studio	3
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	24

2.2.2 Directed Elective in Community and Regional Planning (3 credit hours):

Specific course is selected through individual advising.

Directed Elective in Community and Regional Planning	3
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	3

Total Community and Regional Planning Principal Course Credit Hours 27

3. Civil Engineering/Community and Regional Planning Completion Track

One of the following tracks is utilized to complete the dual degree program:

3.1 Master's Thesis (*Graduate Studies Option I*)

CIVE 899—Master's Thesis	3
CRPL 899—Master's Thesis	3
Open Electives	6
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	12

—or—

3.2 Professional Project (*Graduate Studies Option III*)

CIVE 898—Special Topics in Civil Engineering	3
CRPL 898—Professional Project	3
Open Electives	6
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	12

Total Engineering/Planning Completion Track Credit Hours: 12

Total Graduate Credit Hours for MCRP and MS—CE Degrees: 61