



## **DEPARTMENT OF CIVIL, CONSTRUCTION AND ENVIRONMENTAL ENGINEERING**



## **MANUAL FOR GRADUATE STUDIES**

**2023-2024**

**UPDATED JUNE 2023**

## Table of Contents

<b>1. INTRODUCTION.....</b>	<b>5</b>
<b>2. ADMISSION.....</b>	<b>6</b>
<b>2.1. ENTRANCE REQUIREMENTS – GPA AND TEST SCORES .....</b>	<b>6</b>
2.1.1. MASTER OF SCIENCE (MS) DEGREE .....	7
2.1.2. MASTER OF ENGINEERING (MENG) DEGREE .....	7
2.1.3. MASTER OF CONSTRUCTION MANAGEMENT (MCM) DEGREE .....	7
2.1.4. PH.D. DEGREE .....	7
<b>2.2. ENTRANCE REQUIREMENTS - PREVIOUS DEGREES AND LEVELING COURSES.....</b>	<b>7</b>
2.2.1. MASTER OF SCIENCE (MS) DEGREE .....	7
2.2.2. MASTER OF ENGINEERING (MENG) DEGREE .....	9
2.2.3. MASTER OF CONSTRUCTION MANAGEMENT (MCM) DEGREE .....	10
2.2.4. PH.D. DEGREE .....	10
<b>3. INFORMATION PERTINENT TO ALL GRADUATE DEGREES .....</b>	<b>11</b>
3.1. INCOMPLETE GRADES .....	11
3.2. WITHDRAWAL FROM A COURSE .....	11
3.3. COURSES TAKEN IN NON-DEGREE STATUS .....	11
3.4. UNDERGRADUATE COURSES TAKEN FOR GRADUATE CREDIT.....	11
3.5. COURSES LISTED WITH BOTH UNDERGRADUATE AND GRADUATE SECTIONS .....	12
3.6. TRANSFER CREDIT.....	12
3.7. CREDIT/NON-CREDIT GRADES .....	12
3.8. GRADES OF C AND C+.....	13
3.9. INCOMPLETE/NR GRADES .....	13
3.10. CREDIT FOR EXPERIENTIAL LEARNING.....	13
3.11. GRADE POINT AVERAGE.....	13
3.12. SPECIALIZATION .....	13
3.13. INITIAL ADVISEMENT .....	13
3.14. THESIS, DISSERTATION, AND PROJECT PROPOSALS .....	13
3.15. PROGRAM OF STUDIES/APPLICATION FOR CANDIDACY .....	13
3.16. DEPARTMENTAL NOTIFICATION OF INTENT TO GRADUATE .....	14
3.17. DEFENSE OF THESIS, DISSERTATION, AND PROJECTS .....	14
3.18. PROBLEMS STUDIES COURSES (CE 551) .....	14
<b>4. INFORMATION PERTINENT TO ALL MASTER’S DEGREES .....</b>	<b>15</b>
4.1. TIME TO COMPLETION OF DEGREE .....	15
4.2. SINGLE FACULTY MEMBER LIMIT .....	15
4.3. DEGREE REQUIREMENT DEADLINES.....	15
4.4. REQUIRED ENROLLMENT .....	15

<b>5. MASTER OF SCIENCE (MS)</b> .....	<b>15</b>
5.1. COURSE REQUIREMENTS.....	16
5.2. COMMITTEE-ON-STUDIES.....	16
5.3. THESIS REQUIREMENTS .....	17
5.3.1. THESIS CONTENT .....	17
5.3.2. THESIS FORMAT.....	17
5.3.3. MASTER’S EXAMINATION.....	17
<b>6. MASTER OF ENGINEERING (MENG)</b> .....	<b>17</b>
6.1. COURSEWORK REQUIREMENTS.....	17
<b>7. MASTER OF CONSTRUCTION MANAGEMENT (MCM)</b> .....	<b>18</b>
7.1. COURSEWORK REQUIREMENTS.....	18
<b>8. DOCTOR OF PHILOSOPHY (PH.D.)</b> .....	<b>18</b>
8.1. TIME TO COMPLETION OF DEGREE .....	18
8.2. COURSE REQUIREMENTS .....	18
8.3. SINGLE FACULTY MEMBER LIMIT.....	19
8.4. QUALIFYING EXAMINATION .....	19
8.4.1. WRITTEN CRITIQUE .....	19
8.4.2. ORAL EXAMINATION.....	19
8.4.3. ASSESSMENT.....	19
8.5. COMMITTEE-ON-STUDIES.....	20
8.6. APPLICATION FOR CANDIDACY.....	20
8.7. COMPREHENSIVE EXAMINATION .....	20
8.8. DISSERTATION COMMITTEE.....	21
8.9. DISSERTATION HOURS .....	21
8.10. DISSERTATION CONTENT AND FORMAT .....	22
8.11. DISSERTATION DEFENSE .....	22
8.12. COMPLETION OF THE DISSERTATION EVALUATION FORM.....	23
8.13. FINAL DISSERTATION APPROVAL .....	23
8.14. DISSERTATION SUBMISSION .....	23
8.15. JOINT PH.D. PROGRAM IN ARCHITECTURAL ENGINEERING.....	23
8.15.1. ADMISSION TO THE PROGRAM.....	23
8.15.2. LEVELING COURSES .....	24
<b>APPENDIX A – COURSE EMPHASIS FOR GRADUATE DEGREES</b> .....	<b>26</b>
A.1 CONSTRUCTION ENGINEERING.....	27
A.2 ENVIRONMENTAL ENGINEERING.....	28
A.3 GEOTECHNICAL ENGINEERING.....	29

<b>A.4 WATER RESOURCES ENGINEERING.....</b>	<b>30</b>
<b>A.5 STRUCTURAL ENGINEERING AND STRUCTURAL MECHANICS.....</b>	<b>31</b>
<b>A.6 TRANSPORTATION AND TRAFFIC ENGINEERING .....</b>	<b>32</b>
<b>A.7 MASTER OF ENGINEERING IN CIVIL ENGINEERING .....</b>	<b>33</b>
<b>A.8 MASTER OF CONSTRUCTION MANAGEMENT (MCM) .....</b>	<b>34</b>
<b><u>APPENDIX B: INDEPENDENT STUDY SYLLABUS TEMPLATE .....</u></b>	<b><u>35</u></b>

## 1. INTRODUCTION

This manual outlines the requirements and procedures for graduate degrees offered by the University of New Mexico, Department of Civil, Construction and Environmental Engineering (hereafter referred to as the Department), including the Master of Science in Civil Engineering (MS), Master of Engineering in Civil Engineering (MEng), Master of Construction Management (MCM), and Doctor of Philosophy (Ph.D.) in Engineering.

The Department, the School of Engineering, and the University specify the requirements for the degrees. Students should carefully study the Graduate Program section and the Civil Engineering Graduate Program section of the University of New Mexico Catalog applicable at the time of their admission to become familiar with both general and specific requirements (see <http://catalog.unm.edu/>).

The requirements and regulations in this manual are those in effect at the time of printing. Graduate Studies and the Department may change requirements. Such changes will become effective at a time determined by the Department.

The student's degree requirements are fixed when the Program of Studies (MS, MEng, or MCM) or the Application for Candidacy Forms (Ph.D.) are completed and approved by the student's major advisor (and Committee on Studies for Ph.D.), the Civil Engineering (CCEE) Director of Graduate Programs, and Graduate Studies.

This manual summarizes most graduate degree requirements but does not necessarily specify all details of the official requirements that are maintained by Graduate Studies. It is the student's responsibility to be informed of and satisfy all requirements by communicating with the Senior Academic Advisor and the CCEE Director of Graduate Programs, and by reviewing the information on the Graduate Studies website, in the UNM catalog, and in this manual.

Be sure to read the appropriate handbook thoroughly.

In addition to this handbook, students should thoroughly review:

- Graduate Studies website: <http://grad.unm.edu/>
- UNM Catalog: <http://catalog.unm.edu/>

## 2. ADMISSION

UNM provides online applications for graduate students. Applications may be started at the following web site:

<http://apply.unm.edu>

Applicants are responsible for ensuring that all required materials are submitted through the online application system. Online application guidelines can be found by clicking Application Instructions within the application **or** on the Graduate Studies web site at:

<http://grad.unm.edu/graduate-programs/grad-app.html>

The CCEE Director of Graduate Programs evaluates applicants in consultation with CCEE faculty and the Department's Graduate Program Committee and makes recommendations to Graduate Studies and International Admissions regarding admissions.

Admission is based on the student's previous academic performance, professional background and career objectives, Graduate Record Exam (GRE) General Test or Graduate Management Admission Test (GMAT, for the MCM program only) scores, English language skills, letters of recommendation, and compatibility between the applicant's interests and the Department's resources. Applicants must include a letter of intent/purpose summarizing their qualifications, professional goals, and intended area of study. The letter may also include additional information relevant to the application.

The deadlines for application for admission to the graduate programs in the CCEE Department are shown below:

<b>Application Deadline</b>		
<b>Semester</b>	<b>U.S. Students &amp; Permanent Residents</b>	<b>International Students</b>
Fall	July 15	March 1
Spring	November 10	August 1
Summer	April 29	January 1

### 2.1. Entrance Requirements – GPA and test scores

The entrance requirements for new students are summarized below. Students that do not meet the minimum program requirements listed below, have unusual backgrounds, and/or have other special circumstances can request that their applications be considered by the Graduate Program Committee. The Department does not offer "provisional", "probationary", or "conditional" admissions.

### **2.1.1. Master of Science (MS) Degree**

Grade Point Average (GPA): A minimum GPA of 3.0 (or equivalent) over the last two undergraduate years in science, math, and engineering courses.

GRE Exam Scores: A minimum combined score of 300 on the verbal and quantitative sections is required.

Language Skills for International Students: International students must meet all UNM Graduate Admissions Requirements including tests for English proficiency.

### **2.1.2. Master of Engineering (MEng) Degree**

Grade Point Average (GPA): A minimum GPA of 3.0 (or equivalent) over the last two undergraduate years in science, math, and engineering courses.

GRE Exam Scores/FE Exam: A minimum combined score of 300 on the verbal and quantitative sections of the GRE is required OR evidence of passage of the FE exam.

Language Skills for International Students: International students must meet all UNM Graduate Admissions Requirements including tests for English proficiency.

### **2.1.3. Master of Construction Management (MCM) Degree**

Grade Point Average (GPA): A minimum GPA of 3.0 (or equivalent) for courses in the major field of study over the last two undergraduate years.

GMAT/GRE Exam Scores: A minimum score of 500 on the GMAT is required OR a minimum combined score of 300 on the verbal and quantitative sections of the GRE is required.

Language Skills for International Students: International students must meet all UNM Graduate Admissions Requirements including tests for English proficiency.

### **2.1.4. Ph.D. Degree**

The requirements for the Ph.D. degree are the same as the requirements for the MS degree (see Section 2.1.1).

## **2.2. Entrance Requirements - previous degrees and leveling courses**

### **2.2.1. Master of Science (MS) Degree**

#### ***2.2.1.1. MS applicants with a BS in Civil Engineering***

Applicants with a BS in Civil Engineering are eligible for admission; no preparatory classes are required.

### **2.2.1.2. MS applicants with an engineering degree outside of Civil Engineering**

Applicants with an undergraduate or graduate degree in engineering other than Civil Engineering can be admitted directly to the program, provided they satisfy all other admissions criteria. They may need to take some undergraduate courses that are prerequisites for graduate courses in their field of study. This course sequence is determined on an individual basis and depends on the student's background and intended program of study. The preparatory course sequence will be selected in consultation with the CCEE faculty in the student's intended area of study. A member of that group must write a memo identifying the course sequence to the Department's Director of Graduate Programs that will be placed in the student's file. The preparatory course sequence will ultimately be listed on the student's Program of Studies which is filed with Graduate Studies.

### **2.2.1.3. MS applicants without an engineering degree**

Applicants without an undergraduate or graduate engineering degree may apply for admission to the department, with a petition submitted on their behalf by a faculty member willing to serve as their advisor. This petition should include a description of the applicant's circumstances, qualifications, and plans for graduate studies.

Applicants without an undergraduate engineering degree are required to take a set of preparatory courses, which vary by their area of emphasis. Students must maintain a cumulative GPA of 3.0 and no grade below a "B" for these preparatory courses.

These courses (and their equivalent UNM course numbers) are as follows:

#### **All areas**

3 semesters of calculus (MATH 1512, 1522, and 2531), 1 semester of applied ordinary differential equations (MATH 316)

#### **Construction Engineering**

- Engineering Statics (CE 202)
- Mechanics of Materials (CE 302)
- Soil Mechanics (CE 360)
- Engineering Economy (CE 350)

#### **Environmental Engineering and Water Resources Engineering**

- 1 semester of college-level chemistry
- 1 semester of undergraduate or graduate science, such as biology, microbiology, geology, or an additional semester of chemistry. (*This course should be selected in consultation with an active or potential faculty advisor.*)
- Fluid mechanics (CE 331).
- Environmental and Water Resources Engineering (CE 335) or Hydraulic Engineering and Hydrology (CE 442)



### **Geotechnical Engineering**

- 1 semester of college-level chemistry
- Soil Mechanics (CE 360). (*Note that Engineering Statics (CE 202) and Mechanics of Materials (CE 302) are prerequisites, which may be waived at the discretion of the instructor, depending on the student's qualifications.*)

### **Structural Engineering**

- Engineering Statics (CE 202)
- Dynamics (ME 306)
- Mechanics of Materials (CE 302)
- Soil Mechanics (CE 360)
- Structural Analysis (CE 308)

### **Transportation Engineering**

- Elements of Mathematical Statistics and Probability Theory (STAT 345)
- Engineering Economy (CE 350) or Intermediate Microeconomics I (ECON 300)

## **2.2.2. Master of Engineering (MEng) Degree**

### **2.2.2.1. MEng applicants with a BS in Civil Engineering**

Applicants with a BS in Civil Engineering are eligible for admission; no preparatory classes are required.

### **2.2.2.2. MEng applicants with an engineering degree outside of Civil Engineering**

Applicants with an undergraduate or graduate degree in engineering other than Civil Engineering can be admitted directly to the program, provided they satisfy all other admissions criteria. They may need to take some undergraduate courses that are prerequisites for graduate courses in their field of study. This course sequence is determined on an individual basis and depends on the student's background and intended program of study. The preparatory course sequence will be selected in consultation with the CCEE faculty in the student's intended area of study. A member of that group must write a memo identifying the course sequence to the Department's Director of Graduate Programs that will be placed in the student's file. The preparatory course sequence will ultimately be listed on the student's Program of Studies which is filed with Graduate Studies.

### **2.2.2.3. MEng applicants without an engineering degree**

Applicants without an undergraduate or graduate engineering degree may apply for admission to the department, with a petition submitted on their behalf by a faculty member willing to serve as their advisor. This petition should include a description of the applicant's circumstances, qualifications, and plans for graduate studies.

Applicants without an undergraduate engineering degree are required to take a set of preparatory courses. Students must maintain a cumulative GPA of 3.0 and no grade below a "B" for these preparatory courses. These courses (and their equivalent UNM

course numbers) are as follows:

- Three semesters of calculus and one semester of ordinary differential equations (Math 1512, 1522, 2531, and 316)
- ....One class in college chemistry
- ....One year of calculus-based college physics
- ....Engineering Statics – CE 202
- ....Dynamics – ME 306
- ....Mechanics of Materials – CE 302
- ....Fluid Mechanics – CE 331
- ....Soil Mechanics – CE 360

### **2.2.3. Master of Construction Management (MCM) Degree**

All MCM applicants are expected to have college-level proficiency in English (reading and writing) and mathematics.

### **2.2.4. Ph.D. Degree**

Generally, admission to the Ph.D. program requires that the applicant has earned an appropriate MS degree and has demonstrated a high potential for research. Exceptional students may pursue a Ph.D. without first earning an MS. Students interested in pursuing a Ph.D. are encouraged to contact appropriate faculty directly to discuss research interests and the potential to join a faculty's research program.

#### ***2.2.4.1. Ph.D. applicants with a BS or MS in Civil Engineering***

Applicants with a BS or MS in Civil Engineering are eligible for admission; no preparatory classes are required.

#### ***2.2.4.2. Ph.D. applicants with an engineering degree outside of Civil Engineering***

Applicants with an undergraduate or graduate degree in engineering other than Civil Engineering can be admitted directly to the program, provided they satisfy all other admissions criteria.

#### ***2.2.4.3. Ph.D. applicants without an engineering degree***

Applicants without an undergraduate or graduate engineering degree may apply for admission to the department, with a petition submitted on their behalf by a faculty member willing to serve as their advisor. This petition should include a description of the applicant's circumstances, qualifications, and plans for graduate studies.

Applicants without an undergraduate engineering degree are required to take a set of preparatory courses. Students must maintain a cumulative GPA of 3.0 and no grade below a "B" for these preparatory courses. These courses are the same as those described for MS applicants without engineering degrees in section 2.2.1.3.

### **3. INFORMATION PERTINENT TO ALL GRADUATE DEGREES**

UNM policies regarding graduate degrees can also be found in the University Catalog (<http://catalog.unm.edu/>). In some cases, the Department may have additional policies specific to our degrees which are described in the Graduate Manual.

#### **3.1. Incomplete Grades**

The grade of "I" may be given if circumstances beyond the student's control prevent the student from completing a course. The "I" automatically becomes "F" if not removed within one year from the published ending date of the semester in which the grade was assigned.

#### **3.2. Withdrawal from a Course**

A student may withdraw from a course until the end of the 12<sup>th</sup> week of the semester without approval. Withdrawal after the twelfth week requires completing an Enrollment Authorization - Drop with Dean's Permission form with the signature of the Associate Dean of the School of Engineering. No withdrawals are accepted after the last day of instruction of the semester, prior to final exam week.

#### **3.3. Courses taken in Non-Degree Status**

Twelve hours of graduate credit taken in non-degree status at UNM may be applied toward a graduate degree. Designated 300 or 400 undergraduate courses (noted by an \* with the course number) taken in non-degree status may be later applied toward a graduate degree, if those courses are identified as being taken for graduate credit at the time of enrollment as outlined by UNM policy.

Courses taken in non-degree status must carry a grade of B or better to apply to your graduate degree (see <http://catalog.unm.edu/>).

If you also have transfer courses (see below), a total of 12 credits of non-degree *and/or* transfer courses may be applied toward your degree.

The number of transfer and/or applied (including non-degree) credits used toward a graduate program may not exceed 50% of the required coursework for the degree.

#### **3.4. Undergraduate Courses Taken for Graduate Credit**

Students may wish to take certain upper division (300 and 400 level) undergraduate courses outside the Civil Engineering department as a graduate student and use them in their graduate degree program. Those undergraduate courses marked with \*\* in front of the course number, such as \*\*Math 319 - Theory of Numbers, are, according to the UNM catalog, "available for graduate credit except for graduate majors in the department".

That means that a \*\* course is eligible to be used for graduate credit if the student is not majoring in that department. This eligibility is not automatically done by registering for the course.

To have a double-starred course count for graduate credit, the student must first have their Advisor's approval that it is acceptable to use the course in their degree program. The student must then print the Level Restriction/Graduate Credit Authorization form (GCA) (<http://registrar.unm.edu/forms/index.html>), complete it with all the required signatures, and submit it following the form instructions. By signing this form, both the student and the instructor acknowledge that the student will be held accountable for graduate-level work and requirements. When approved, the letters GR will appear next to the class on the student's transcript which shows that the course has been approved for graduate credit. The GCA form must be filed by the last day of the fourth week of classes during the regular semester. Students are responsible for obtaining all signatures and for submitting the GCA.

Graduate courses taken as an undergraduate must carry a grade of B or better to apply to your graduate degree (see <http://catalog.unm.edu/>).

### **3.5. Courses listed with both undergraduate and graduate sections**

Students must sign up for the graduate section for courses that have both undergraduate and graduate sections (e.g., CE474/574).

If a student has taken the undergraduate version of a course and applied this course to their undergraduate degree, they may not take the graduate version of the course for graduate credit.

### **3.6. Transfer Credit**

Transfer credit for graduate-level course work taken at an accredited institution either in graduate or non-degree status and *not applied to a previous degree* is limited to 12 hours.

In accordance with UNM policy, graduate courses used as transfer credit must carry a grade of B or better to apply to your graduate degree.

If you also have UNM courses taken in non-degree graduate status (see above), a total of 12 credits of non-degree *and/or* transfer courses may be applied toward your degree.

### **3.7. Credit/Non-Credit grades**

Other than CE Seminar (CE 691), no courses for degree credit may be taken on a CR/NC basis.

### **3.8. Grades of C and C+**

No more than 6 credit hours of course work in which the student received a C or C+ grade.

### **3.9. Incomplete/NR Grades**

Students may not graduate with any I (Incomplete) or NR (no record) grades. These issues should be resolved as soon as they arise to preserve the student's intended graduation semester.

### **3.10. Credit for Experiential Learning**

The Department grants no credit for experiential learning.

### **3.11. Grade Point Average**

Students failing to maintain a 3.0 GPA will be placed on academic probation in accordance with Graduate Studies policy (See <http://catalog.unm.edu/>, Academic Probation and Consequences). Students having a GPA of less than 3.0 are not permitted to take the Master's or Comprehensive examinations.

### **3.12. Specialization**

MS and Ph.D. students must identify an area of concentration authorized in the Graduate Manual. Each area of concentration has respective core and elective courses, which are determined by faculty in that area (see Appendix A). MEng and MCM students do not need to identify an area of concentration.

### **3.13. Initial Advisement**

The student should select a major advisor in their area of concentration as early as possible. The student should meet with a major advisor before the initial registration and identify a program of studies for their first semester. Courses that do not receive prior approval of a major advisor may be disallowed.

### **3.14. Thesis, Dissertation, and Project Proposals**

The student will prepare, with the advice of the major advisor, a written research/project proposal and present it for approval by their Committee-on-Studies. The Committee may request an oral presentation. The proposal must be submitted sufficiently early for the Committee's suggestions to be fully incorporated into the work.

### **3.15. Program of Studies/Application for Candidacy**

A Program of Studies (MS, Meng, and MCM students) should be filed with Graduate Studies during the semester after 12-16 hours of graduate work have been completed.

The Application for Candidacy (Ph.D. students) should be filed with Graduate Studies in the same semester in which you pass the Comprehensive Examination. A major advisor, who must be a full-time CCEE faculty member, shall guide the student's coursework. Approval of the POS and Application for Candidacy by the major advisor, the CCEE Director of Graduate Programs, and Graduate Studies is required.

The application must be filed by July 1 for fall graduation, October 1 for spring graduation, and March 1 for summer graduation. Changes in an approved program may be submitted after approval by the major advisor and the Director of Graduate Programs.

### **3.16. Departmental Notification of Intent to Graduate**

The student must inform the Director of Graduate Programs and the Senior Academic Advisor of their intent to complete all degree requirements by July 20 for fall graduation, December 5 for spring graduation, or May 2 for summer graduation. This notification will not be accepted until a Program of Studies or Application for Candidacy has been submitted to and approved by the Dean of Graduate Studies.

### **3.17. Defense of Thesis, Dissertation, and Projects**

Two weeks before the presentation of the thesis or dissertation the student must:

- (a) Provide a final or near final copy of the thesis/dissertation/project to the Committee-on-Studies.
- (b) Notify the Department and Graduate Studies of the date, time, and location of the defense by submitting an "Announcement of Exam" form.

The presentation shall summarize the thesis/dissertation work by the student and include an oral examination by the Committee-on-Studies. The examination may cover coursework as well as the research topic. The presentation is open to the public. The deliberation for final acceptance is open only to the Committee. Results of the examination must be submitted to Graduate Studies by 5:00 pm on November 15 for Fall graduation, April 15 for Spring graduation, or July 15 for Summer graduation.

### **3.18. Problems Studies Courses (CE 551)**

Independent study enables a student to pursue for course credit a topic of interest under the supervision of a faculty member. CE 551 (Problems) provides the opportunity for students to perform advanced reading, analysis, design, or research. CE 551 is variable credit (1 to 3) and no more than 6 credit hours can be applied towards graduation. The Problems course is intended to provide a rigorous academic experience equivalent to that of any other graduate course. The student is expected to produce a final product to be completed during the semester for which they are registered for the course.

Problems courses must be approved by the Instructor of Record as well as by the Director of Graduate Studies. The approval process will be based on the submission of a course syllabus that includes logistical details, learning outcomes, course activities, and grading

practices. A template of a syllabus is included in Appendix B of this manual. The syllabus should be submitted to the Instructor of Record, Director of Graduate Studies, and Senior Academic Advisor no later than the second week of the semester. A copy of the syllabus will be placed in the student's academic file.

The Instructor of Record must be a tenure or tenure-track faculty member within the CE Department. They are responsible for ensuring the terms of the syllabus are followed and for assigning the final grade.

## **4. INFORMATION PERTINENT TO ALL MASTER'S DEGREES**

### **4.1. Time to Completion of Degree**

UNM requires that all requirements for master's degrees be completed within seven years prior to the granting of the degree, including transfer work. No course work applied to the degree requirements, including transfer work, may be more than seven years old at the time a master's degree is conferred. Extensions to this time limit are granted by Graduate Studies only for the most unusual circumstances that are clearly beyond the student's control.

### **4.2. Single Faculty Member Limit**

No more than half the graduate program's minimum required coursework hours, exclusive of Thesis, may be taken with a single faculty member.

### **4.3. Degree Requirement Deadlines**

Except for courses in which you are currently enrolled, all degree requirements (including final thesis & dissertation manuscripts, graduate exams, defenses, and Incomplete and NR-no record grades) must be completed, and related documentation received by Graduate Studies by the following deadlines:

Fall Graduation -- November 15  
Spring Graduation -- April 15  
Summer Graduation -- July 15

### **4.4. Required Enrollment**

All master's students must be enrolled for at least 1 graduate credit either in Master's Thesis (CE 599), Problems (CE 551), or another graduate course for the semester (including the summer session) in which they are completing degree requirements.

## **5. MASTER OF SCIENCE (MS)**

Master of Science (MS) in Civil Engineering students may take courses in construction, environmental engineering, hydraulics, geotechnical engineering, structural engineering/structural mechanics, transportation, or water resources. The primary difference between

the MS degree and the MEng degree is that the MS degree requires a written thesis and an oral defense. Master's students financially supported as Teaching or Research Assistants usually complete an MS degree.

### **5.1. Course requirements**

The MS course requirements include the following:

1. 32 credit hours total.
2. A minimum of 24 hours of coursework (see Appendix A1-A6 for recommendations based on areas of focus).
3. A minimum of 6 hours of CE 599 (Master's Thesis).
4. A maximum of 6 hours of Problems (CE 551) courses.
5. A minimum of 9 hours of 500-level courses.
6. A maximum of 12 hours taken in non-degree and/or transfer status.
7. 2 hours of CE 691 (Seminar).
8. General UNM limits, including coursework from a single professor, and time of completion.

Students must complete a minimum of 6 hours of thesis (CE 599) credit, and only 6 hours may be applied to the Program of Studies. Once initiated, continuous enrollment in CE 599 (fall and spring semesters) is required until the thesis is accepted by Graduate Studies.

### **5.2. Committee-on-Studies**

A Committee-on-Studies is formed at the time the student begins thesis research. The Committee must be composed of at least three members; at least two members must be full-time tenure or tenure-track CCEE Faculty with graduate faculty approval. The major advisor chairs the Committee and must be a full-time, tenure or tenure-track CCEE faculty member with graduate faculty approval. The remainder of the Committee is selected in consultation between the major advisor and the student. Any non-tenure track UNM faculty or any individual outside UNM must be approved for graduate committee service in our department to serve on a committee. Notification of Committee membership must be made in writing to the Director of Graduate Programs and must be approved by Graduate Studies. The Committee evaluates the project/thesis and judges the Master's Exam.

For any individual designated for committee service who is outside the university environment, part of the approval procedure requires that the individual sign a departmental letter describing the possible conflict of interest associated with academic activities. This letter should be given to the individual by the student and must be returned to the Senior Academic Advisor before the approval process can begin.



### **5.3. Thesis requirements**

#### **5.3.1. Thesis Content**

Thesis work is generally of scientific nature rather than design or practice-oriented. The thesis should involve original work suitable for professional publication.

#### **5.3.2. Thesis Format**

Information pertinent to the preparation of a thesis and dissertation is described on the web page, Overview of Thesis & Dissertation Policies and Procedures:

<https://grad.unm.edu/degree-completion/thesis-dissertations/>

#### **5.3.3. Master's Examination**

The thesis presentation to the Committee constitutes the Master's Examination. A student may defend the thesis after the POS has been approved, has a graduate GPA of at least 3.0, and is not on probation.

## **6. MASTER OF ENGINEERING (MEng)**

### **6.1. Coursework requirements**

The MEng degree is a coursework-only (*Plan III*) degree with a focus on professional practice. Graduate study leading to the MEng degree will be offered within or by combining six focus areas of civil engineering: construction engineering, environmental engineering, geotechnical engineering, structural engineering and material science, transportation engineering, and water resources-hydraulic engineering.

The MEng course requirements include the following (see Appendix A.7):

1. 33 credit hours of graduate coursework.
2. A minimum of 15 credit hours of practice-oriented civil engineering classes composed from the courses listed in Appendix A.7.
3. 12 additional credit hours that support the student's area of interest. Courses outside of those offered by the School of Engineering require prior approval by the faculty advisor.
4. At least 6 additional credit hours that advance the student's management skillset (see Appendix A.7).
5. A maximum of 12 credit hours can be taken in transfer and/or non-degree graduate student status.
6. If a student has taken the undergraduate version of any listed course and applied this course to their undergraduate degree, they cannot take the graduate version of the course for graduate credit.

## **7. MASTER OF CONSTRUCTION MANAGEMENT (MCM)**

### **7.1. Coursework requirements**

The MCM program is a Course Work Only Option (Plan III). All students must complete a set of core courses for the MCM degree. The required core courses are CE 573, CE 574, CE 575, and CE 577. Students may select from a range of additional elective courses to complete the degree requirements. Students should work with an academic advisor to select appropriate elective courses.

The MCM course requirements include the following (see Appendix A.8):

1. 30 credit hours total.
2. A maximum 6 credit hours of Problems (CE 598).
3. A minimum 12 credit hours of 500-level courses.
4. A maximum 12 credit hours taken in non-degree status.
5. If a student has taken the undergraduate version of any listed course and applied this course to their undergraduate degree, they cannot take the graduate version of the course for graduate credit.

## **8. DOCTOR OF PHILOSOPHY (Ph.D.)**

### **8.1. Time to Completion of Degree**

Ph.D. candidates have five years to complete all degree requirements from the date that they are formally advanced to candidacy by Graduate Studies (passing of the Comprehensive Examination). Any extensions of this time limit must be requested in writing. The student's Committee on Studies, the CCEE Director of Graduate Programs, and Graduate Studies must support the request.

### **8.2. Course Requirements**

The Ph.D. degree requires:

1. 48 credit hours of coursework. Students who have earned a MS degree can transfer up to 24 credit hours of coursework. See Appendix A1-A6 for recommendations based on areas of focus.
2. 18 hours of dissertation credits.
3. 2 hours of graduate seminar (CE 691) taken as Ph.D. student.
4. Note that at least 24 of all credits must be taken at UNM and at least 18 credits in courses numbered 500 or above must be completed after admission to the Ph.D. program in Civil Engineering.
5. Completion of coursework aligned with their area of specialty (see Appendix A).
6. If a student has taken the undergraduate version of any listed course and applied this course to their undergraduate degree, they cannot take the graduate version of the course for graduate credit.

### **8.3. Single Faculty Member Limit**

No more than 50% of the required course credits at UNM may be taken with a single faculty member.

### **8.4. Qualifying Examination**

The Ph.D. Qualifying Exam consists of two parts: (1) a written critical review of a technical paper and (2) an oral presentation before a three-member qualifying exam panel composed of CCEE faculty. The goal of the qualifying exam is to ensure that the student has the ability to learn independently, write concisely, think critically, make an effective oral presentation, and answer questions logically, while displaying a solid grasp of underlying fundamental principles.

#### **8.4.1. Written Critique**

Under the guidance of the panel chair, the exam committee will select a technical paper related to the student's major area of study. The Ph.D. Qualifying exam will commence over a one-week period that begins upon receipt of the instructions and journal article. During this one-week period the student may obtain and read any references necessary to assist in understanding the article. The student should critically evaluate the paper and write a review not to exceed four pages. The critique should not be an extended abstract or a summary of a research article but rather should identify and discuss the strengths and weaknesses of the research. Suggested guidelines for reviewing a paper will be provided to the student in advance of the exam.

#### **8.4.2. Oral Examination**

Each student is required to participate in an oral examination conducted by the qualifying exam panel. There are two parts to the oral exam. First, the student will present a concise 15-minute presentation (maximum time) summarizing the paper critique. The presentation should highlight the main findings of the review and include a brief description of the experimental results. Visuals (e.g. PowerPoint) are recommended and can include figures from the paper. Second, the exam committee will test the student about content from courses related to their area of study with an emphasis on the student's master's coursework. The questions will focus primarily (but not exclusively) on fundamental principles related to the technical paper. Oral presentations should occur within one week of the deadline for the written critique.

#### **8.4.3. Assessment**

The exam is just one element in assessing the progress of the student and the student's potential and capabilities to succeed at the Ph.D. level. The exam committee will assign a grade of pass or fail based on the student's written critique, the oral component of the exam, and the student's academic performance to date. Students have two opportunities to pass the qualifying exam.

Students wishing to take the Qualifying Exam must notify the CCEE Director of Graduate Programs in writing of their intent to take the examination by September 15 or February 15. This memorandum will identify the student's major advisor. The Director of Graduate Programs will assign the examination committee members.

### **8.5. Committee-on-Studies**

The purpose of the committee on studies is to assist a student in planning a program of studies for the Ph.D. degree, one which is an integrated individual program of study and research meeting general University and specific graduate program requirements. This committee usually serves as the core of the doctoral comprehensive examination committee and/or the dissertation committee.

The candidate should discuss their interests with several CCEE faculty early in attendance at UNM. It is helpful, but not necessary, for an agreement to be reached with a CCEE faculty member to serve as Committee-on-Studies chair before the Qualifying Examination is taken.

The Committee shall consist of at least four faculty members, of whom at least two, including the committee Chair, must be full-time, tenure or tenure-track CCEE faculty. The Chair is usually the student's major advisor. At least one of the Committee members must hold a tenure or tenure-track appointment outside the Department (can be faculty in another UNM department or in another institution). The Committee should be formed the same semester the candidate passes the Qualifying Examination. The Committee-on-Studies must be approved by the CCEE Director of Graduate Programs.

All members of the Committee-on-Studies must be on the Approved List of Faculty for Graduate Committee Service with Graduate Studies. Prospective members who are not on this list must be approved before they can be listed on the committee. Check with the Senior Academic Advisor in the department as to the individual's status and as to the procedure that must be followed.

### **8.6. Application for Candidacy**

The Committee-on-Studies meets with the candidate to plan and approve the program of coursework, including make-up work as needed. All Committee members must be present at this meeting. The candidate will draft an Application for Candidacy Form and submit it to the Committee for approval. The full committee, the Director of CCEE Graduate Programs, and Graduate Studies must approve the Application for Candidacy Form. The signed and approved Application for Candidacy Form formally establishes the requirements that the student must complete in order to receive the Ph.D. degree.

### **8.7. Comprehensive Examination**

When the candidate has substantially completed the coursework indicated on the approved Application for Candidacy, the candidate will take the Comprehensive Exam.

This exam, prepared by the Committee, will include both written and oral components and must satisfy the Committee that the candidate is prepared to begin research. All Committee members must be present at the Comprehensive Examination. Students will submit a written dissertation proposal to the Comprehensive Examination Committee one month before the exam. The oral exam will include a presentation of the dissertation proposal followed by questioning by the Committee to examine the student's preparation for the proposed work.

For any individual designated for committee service who is outside the university environment, part of the approval procedure requires that the individual sign a departmental letter describing the possible conflict of interest associated with academic activities. This letter should be given to the individual by the student and must be returned to the Senior Academic Advisor before the approval process can begin.

Doctoral students must be enrolled for and complete at least 1 graduate credit in the term they sit for an examination (including the comprehensive) or complete degree requirements.

#### **8.8. Dissertation Committee**

In most cases, the Committee-on-Studies becomes the Dissertation Committee. Membership change requires approval by the Director of Graduate Programs. Selection and appointment of the Dissertation Committee is subject to the same requirements as the Committee-on-Studies.

#### **8.9. Dissertation Hours**

The Ph.D. requires a minimum of 18 hours of Dissertation (CE 699) credit. Dissertation enrollment may not begin before the semester in which the Comprehensive Examination is passed.

Enrollment for dissertation may be for 3, 6, 9, or 12 hours per semester, with 9 hours the maximum in summer session. The specific number of hours should reflect the amount of time the candidate is devoting to the dissertation and the demand placed on faculty members, laboratories, libraries, and other University resources. Three hours is appropriate when the candidate is working full-time off campus while continuing to make progress with the dissertation. Six hours represents a half-time commitment. Teaching and graduate assistants should generally enroll for 9 hours.

Continuous enrollment for dissertation is expected in subsequent semesters (exclusive of summer) after initial enrollment until the dissertation is accepted by Graduate Studies. This rule applies whether or not the candidate is enrolled for other credit hours. Candidates who fail to register for dissertation in any semester must petition for either reinstatement or readmission, depending upon the circumstances. If reinstatement is the appropriate choice, and the petition is approved, the student must pay a reinstatement fee to the Bursar's Office. If readmission is the appropriate choice, the student must

complete the readmission process and pay the application fee. In extraordinary circumstances, Graduate Studies may waive the requirement for continuous enrollment upon presentation of a written request from the major advisor and the CCEE Director of Graduate Programs. Candidates must be enrolled for the semester in which they complete degree requirements, including the summer session.

### **8.10. Dissertation Content and Format**

A dissertation must reflect original and significant scientific study meriting publication in a leading journal. Information pertinent to preparation of a dissertation is available here: <http://grad.unm.edu/degree-completion/thesis-dissertations/guidelines.html>. The Graduate Studies Manuscript Coordinator arranges workshops on the “preparation of a dissertation.” Contact Graduate Studies for more information.

### **8.11. Dissertation Defense**

The Ph.D. Dissertation must be defended before the student's Dissertation Committee. The Dissertation Committee will consist of at least four members approved by the Dean of Graduate Studies for committee service:

- a. At least two members must hold regular, full-time, tenure or tenure-track faculty appointments in the Department of Civil, Construction and Environmental Engineering.
- b. The dissertation director must hold a regular, full-time faculty appointment in the Department of Civil, Construction and Environmental Engineering or must be employed in the department with the title of: research professor, research associate professor, or research assistant professor. Usually, this individual is the student's major advisor.
- c. The Committee must include at least one member who holds a regular, full-time faculty appointment outside the Department of Civil, Construction and Environmental Engineering. This member may be from UNM or from another accredited institution.
- d. One member may be a recognized expert in the field if other requirements for committee composition are met.

Any individual on the committee who is outside the University must be on the Approved List for Graduate Committee Service with Graduate Studies. If they are not on that list, then the person must be approved before they can be listed on the committee. Check with the Senior Academic Advisor in the department as to the individual's status and as to the procedure that must be followed.

The student must notify the CCEE Director of Graduate Programs at least two weeks before the dissertation defense is held and no later than November 1 and April 1 for students expecting to graduate in the fall and spring semesters, respectively. The student must provide each member of the Dissertation Committee with a complete copy of the dissertation in ample time (2 weeks or more) for review prior to the examination. The

student must provide the department with an announcement of the defense which includes an abstract of the dissertation that is suitable for posting on department bulletin boards.

The dissertation defense is open to the public and CCEE faculty and staff. Students are encouraged to attend. The format for the Dissertation Defense will be developed by the Dissertation Committee. Generally, the defense will consist of a formal presentation of the work described in the dissertation followed by questions from the audience. The committee will then convene closed session to decide whether the work meets the standards appropriate for the Ph.D. degree.

### **8.12. Completion of the Dissertation Evaluation Form**

After the Dissertation Defense, the candidate must ensure that each Committee member completes the Report on Dissertation Form and forwards it to the CCEE Director of Graduate Programs.

### **8.13. Final Dissertation Approval**

The candidate must revise the Dissertation as instructed by the Committee. The Committee chair must confirm that the Dissertation is in final form, and Graduate Studies must approve the Dissertation for format.

### **8.14. Dissertation Submission**

Graduate Studies requires that a dissertation be submitted electronically. The deadline dates for submission are:

November 15 for fall graduation

April 15 for spring graduation

July 15 for summer graduation

### **8.15. Joint Ph.D. Program in Architectural Engineering**

The Joint PH.D. Program in Architectural Engineering represents a cooperative program offered by the CCEE Department and the Architecture Program and Landscape Architecture Program in the School of Architecture and Planning (SA+P). This program is a special emphasis within the CCEE Department, and the Ph.D. degree is granted by the School of Engineering. The following sections highlight unique aspects of this special program. All other programmatic details are consistent with this handbook and the UNM Graduate Studies Manual.

#### **8.15.1. Admission to the Program**

The CCEE Graduate Program Director and SA+P Architecture Director or Landscape Architecture Director will evaluate applicants in consultation with CCEE and SA+P faculty

associated with the emphasis area. The CCEE graduate program director will make the final recommendation to UNM Graduate Studies and International Admissions regarding admissions. Materials, standards, and procedures for admissions are described in [Section 2.1.4](#) of this handbook.

### **8.15.2. Leveling Courses**

Generally, admission to the Ph.D. program will require that the applicant has earned an appropriate MS degree and has demonstrated a high potential for research. In some cases, leveling courses may be required to ensure the incoming student has the skills and knowledge to succeed in the program. Leveling courses in Civil Engineering will be determined by the CCEE Graduate Program Director. Leveling courses in Architecture or Landscape Architecture will be determined by the Architecture or Landscape Architecture Program Director. Leveling courses will be tracked by the academic advisors in Civil Engineering and in the School of Architecture + Planning. Leveling courses do not count towards the requirements of the degree. Students must maintain a cumulative GPA of 3.0 and no grade below a “B” for these preparatory courses.

*Applicants with a BS or MS in Civil or Architectural Engineering:* Such applicants are eligible for admission. However, additional preparatory coursework will likely be required in order ensure an understanding of architectural or landscape architectural principles as described below.

*Applicants with a BS or MS Engineering degree outside of Civil or Architectural Engineering:* Such applicants can be admitted directly to the program, provided they satisfy all other admissions criteria. They may need to take some undergraduate courses that are prerequisites for graduate courses in their field of study. Further, additional preparatory coursework will likely be required in order ensure an understanding of architectural or landscape architectural principles as described below.

*Applicants without an engineering degree:* Applicants without an engineering degree will be required to take a set of preparatory courses. Students must maintain a cumulative GPA of 3.0 and no grade below a “B” for these preparatory courses. These courses (and their equivalent UNM course numbers) are as follows:

- 3 semesters of calculus (MATH 1512, 1522, and 25301 and 1 semester of applied ordinary differential equations (MATH 316)
- Engineering Statics (CE 202)
- Mechanics of Materials (CE 302)
- Soil Mechanics (CE 360)
- Structural Analysis (CE 308) for Architecture or Fluid Mechanics/Lab (CE331) for Landscape Architecture
- Probability and Statistics

Additionally, preparatory coursework will likely be required in order ensure an understanding of architectural or landscape architectural principles as described below.



*Applicants without an Architecture or Landscape Architecture degree:* Applicants without an architecture or landscape architecture degree will be required to take a set of preparatory courses. These courses will be determined by an assessment of their previous academic and professional experience. The intent is to ensure an understanding of architectural or landscape architectural principles and may include coursework in architectural design or landscape architectural design, visualization, history, theory and technology. The total credit hours for preparatory courses in architecture or landscape architecture shall not exceed 12 credits. Examples of preparatory classes include:

- ARCH 500 Graduate Architectural Design I (6)
- ARCH 570 Intro to Visualization (1)
- Two additional credits in Design Visualization (2)
- Arch 524 World Architecture II (3)
- LA 501 Design Studio I (6) *or* ARCH 500 Graduate Arch Design I (6)
- LA 561 History and Theory of Landscape Architecture (3)
- LA 558 Plants Materials (3)

## **Appendix A – Course Emphasis for Graduate Degrees**

The following sections contain course emphasis for each degree and focus area.

**A.1 Construction Engineering****Relevant coursework:**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
CE 551	Problems	1 – 3
CE 570	Simulation and Design of Construction Operations	3
CE 571	Sustainable Design and Construction	3
CE 573	Construction Law	3
CE 574	Principles of Written Construction Documents	3
CE 575	Construction Safety	3
CE 576	Project Delivery Systems	3
CE 577	Project Controls	3
CE 578	Temporary Structures in Construction	3

**Other available courses:**

1. Other Civil Engineering courses.
2. Civil Engineering Special Topics courses – offered occasionally by a faculty member on a specific topic. Course number is listed as CE 598. Check schedule each semester for these courses.
3. Applicable Architecture and Urban Planning courses.
4. Applicable Management courses.

Students must work with their faculty advisor to identify appropriate elective courses for this degree program.

**A.2 Environmental Engineering****Relevant coursework:**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
CE 531	Physical-Chemical Water & Wastewater Treatment	3
CE 534	Environmental Engineering Chemistry	3
CE 536	Biological Wastewater Treatment	3
CE 533	Environmental Microbiology	3
CE 538	Sustainable Engineering	3
CE 539	Radioactive Waste Management	3
CE 540	Design of Hydraulic Systems	3
CE 541	Hydrogeology	3
CE 542	Intermediate Hydrology	3
CE 545	Open Channel Hydraulics	3
CE 547	GIS in Water Resources Engineering	3
CE 549	Vadose Zone Hydrology	3
CHEM 301**	Organic Chemistry	3
CE 551	Problems	1 – 3

Students must work with their faculty advisor to identify appropriate elective courses for this degree program.

**A.3 Geotechnical Engineering****Relevant coursework:**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
CE 502	Finite Element Methods in Solid Mechanics	3
CE 551	Problems	1 - 3
CE 562	Foundation Engineering I	3
CE 566	Pavement Design	3
CE 598	Foundation Engineering II	3

Students must work with their faculty advisor to identify appropriate elective courses for this degree program.

**A.4 Water Resources Engineering****Relevant coursework:**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
CE 541	Hydrogeology	3
CE 542	Intermediate Hydrology	3
CE 545	Open Channel Hydraulics	3
CE 547	GIS in Water Resources Engineering	3
CE 531	Physical-Chemical Water & Wastewater Treatment	3
CE 534	Environmental Engineering Chemistry	3
CE 536	Biological Wastewater Treatment	3
CE 539	Radioactive Waste Management	3
CE 540	Design of Hydraulic Systems	3
CE 551	Problems	1 – 3

Note: Additional water-related classes from across UNM can serve as electives upon approval from the student's advisor.

Students must work with their faculty advisor to identify appropriate elective courses for this degree program.

**A.5 Structural Engineering and Structural Mechanics****Relevant coursework:**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
CE 501 or ME 501	Advanced Mechanics of Materials	3
CE 502	Finite Element Methods in Solid Mechanics	3
CE 521	Structural Dynamics & Earthquake Engineering	3
CE 562*	Foundation Engineering I	3
Math 312**	Partial Differential Equations for Engineering	3
ME 512	Introduction to Continuum Mechanics	3
ME 540	Elasticity	3
CE 506	Prestressed Concrete	3
CE 511	Reinforced Concrete Design	3
CE 513	Timber and Masonry Design	3
CE 518	Theory of Structural Stability	3
CE 524	Structural Design in Metals	3
CE 548	Fuzzy Logic and Applications	3
CE 551	Problems	1 – 3
CE 571	Sustainable Design and Construction	3
CE 578	Temporary Structures in Construction	3

\*CE 360L is a prerequisite for CE 562.

\*\* Available for graduate credit except for graduate majors in the department.

**A.6 Transportation and Traffic Engineering****Relevant coursework:**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
CE 551	Problems	1 – 3
CE 581	Urban Transportation Planning	3
CE 582	Highway and Traffic Engineering	3
CE 548	Fuzzy Logic and Applications	3
CE 576	Project Delivery Systems	3
CRP 543	Transportation Planning	3
ECON 501	Microeconomics I #	3
ECON 504	Mathematical Tools & Economic Models #	3
ECON 508	Statistics & Intro to Econometrics #	3
ECON 509	Econometrics I #	3
ECON 544	Environmental Economics #	3
ECON 560	Public Economics #	3
GEOG 581	Introduction to GIS for Graduate Students	3
GEOG 586	Applications of GIS	3
GEOG 587L	Spatial Analysis and Modeling	3
STAT 527	Advanced Data Analysis I	3
STAT 528	Advanced Data Analysis II	3

\*Course allowed for graduate credit to students enrolled in graduate program.

#Requires permission from the Economics Department to register.

Additional electives may be approved in consultation with your graduate advisor.

Note: Course offerings are subject to change each semester based on enrollment and instructor availability.



## **A.7 Master of Engineering in Civil Engineering**

Required for Degree: 33 credits coursework only

- A minimum of 15 credit hours of practice-oriented civil engineering classes composed from list of courses found below.
- 12 additional credit hours that support the student's area of interest. Courses outside of those offered by the School of Engineering require prior approval by the faculty advisor.
- At least 6 additional credit hours that advance the student's management skillset. The following courses in the CCEE department are acceptable as management related courses: CE455\*, CE574, CE577, CE576. Additional acceptable management courses include: MGMT 501, MGMT 502, MGMT 520, MGMT 556, MGMT 594.

### **Structural Practice Oriented Courses**

502. Finite Element Methods in Solid Mechanics 506. Prestressed Concrete 511. Reinforced Concrete Design 513. Timber and Masonry Design 521. Structural Dynamics and Earthquake Engineering 524. Structural Design in Metals

### **Environmental Practice Oriented Courses**

531. Physical-Chemical Water and Wastewater Treatment 533. Environmental Microbiology 534. Environmental Engineering Chemistry 536. Biological Wastewater Treatment 538. Sustainable Engineering 539. Radioactive Waste Management

### **Water Resources Practice Oriented Courses**

540. Design of Hydraulic Systems 541. Hydrogeology 542. Intermediate Hydrology 545. Open Channel Hydraulics 547. GIS in Water Resources Engineering 549. Vadose Zone Hydrology

### **Geotechnical Practice Oriented Courses**

562. Foundation Engineering I 566. Pavement Design 598. Foundation Engineering II

### **Construction Practice Oriented Courses**

552. Building Information Modeling 571. Sustainable Design and Construction 573. Construction Law 574. Principles of Written Construction Documents 575. Construction Safety 576. Project Delivery Systems 577. Project Controls 578. Temporary Structures in Construction CE570 Simulation and Design of Construction Operations

### **Transportation Practice Oriented Courses**

581. Urban Transportation Planning 582. Highway and Traffic Engineering 598. Design of Sustainable Transportation Systems and Policy 598. Transportation Data Management and Analysis

Note: Refer to section 3.5 of this manual. Some courses listed above have both undergraduate and graduate sections (e.g., CE 474/574). If a student has taken the undergraduate version of any listed course and applied this course to their undergraduate degree, they may not take the graduate version of the course for graduate credit.

**A.8 Master of Construction Management (MCM)****Course Requirements**

Required for Degree: 30 credits hours of coursework only.

**Required Core Courses:**

Course Number	Course Name	Credits
CE 573	Construction Law	3
CE 574	Principles of Written Construction Documents	3
CE 575	Construction Safety	3
CE 577	Project Controls	3

**Construction Electives Available Online:**

Course Number	Course Name	Credits
CE 455*	Engineering Project Management	3
CE 556	Soils in Construction	3
CE 558	Construction Materials	3
CE 570	Simulation and Design of Construction Systems	3
CE 571	Sustainable Design and Construction	3
CE 576	Project Delivery Systems	3
CE 598	Global History of Construction	3
CE 598	Advanced Construction Technologies	3

**Note:** These courses may not be offered online every semester. Please refer to [schedule.unm.edu](http://schedule.unm.edu) for online offerings.

**Other Available Electives:**

Course Number	Course Name	Credits
CE 578	Temporary Structures in Construction	3
MGMT 501	Data Driven Decision-Making	3
MGMT 502	Financial Accounting and Analysis	3
MGMT 520	Operations Design and Decision-Making	3
MGMT 556	Starting New Business	3
MGMT 594	ST: Intro to Project Management	3

\*Course allowed for graduate credit to students enrolled in a graduate program. Normally, a graduate student enrolled in a starred course number below 500 is required to do extra work.

Note: Other electives may be available. Students should discuss other electives with their faculty advisor.

Note: Refer to section 3.5 of this manual. Some courses listed above have both undergraduate and graduate sections (e.g., CE474/574). If a student has taken the undergraduate version of any listed course and applied this course to their undergraduate degree, they may not take the graduate version of the course for graduate credit. Students should work with their faculty advisor and find a substitute.

## Appendix B: Independent Study Syllabus Template

**Course Syllabus (*Template*)**  
**CE 551 – Problems**  
**University of New Mexico**

Course Title: *Independent Study:*

Credit Hours:

Semester and Year Offered:

### **Instructor Information**

Instructor's Name and Title:

Office and phone numbers:

E-mail address:

### **General Course Description**

#### **Course Goals**

*What are the general skills, aptitudes, or bodies of knowledge which this course seeks to enhance?*

#### **Measurable Student Learning Outcomes**

*What should the student know or be able to do after taking this course?*

### **Reading Materials and Resources**

#### **Course Activities**

*Describe all activities (reports, modeling exercises, etc.) along with the percentages or points they are worth.*

#### **Schedule**

*List the major milestones and deadlines for the course.*

### **Grading Policy and Scale**

#### **Code of Conduct**

Academic dishonesty is a violation of UNM's Student Code of Conduct. The complete Student Code of Conduct can be found at: <http://pathfinder.unm.edu/campus-policies/student-code-of-conduct.html>

#### **Students with Disabilities**

The Department of Civil Engineering is committed to providing assistance to help you be successful in this course, and this course is in compliance with the Americans with Disabilities Act (ADA).