

# CIVIL ENGINEERING - BACHELOR OF SCIENCE IN CIVIL ENGINEERING

## Requirements (126 Credits)

In addition to the university requirements for graduation, all students including transfers must satisfy the requirements contained in the academic policies for the NMSU College of Engineering. Students must have a 2.0 grade-point average in all departmental courses and all prerequisites and co-requisites must be taken as required. If a student takes a class and a co-requisite for that class at the same time and does not achieve a grade of C- or better in the co-requisite, the student may take no further classes for which the course or the co-requisite are prerequisite. A student who completes a class three times without achieving a grade of C- or better will be dismissed from the Civil Engineering program, and not allowed to take any Civil Engineering courses from the department.

Students must complete all University degree requirements, which include the following: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 126 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements or elective credits, but may be needed for enrollment in the necessary English and Mathematics coursework.

| Prefix                                                          | Title                                                                    | Credits |
|-----------------------------------------------------------------|--------------------------------------------------------------------------|---------|
| General Education                                               |                                                                          |         |
| Area I: Communications                                          |                                                                          |         |
| English Composition - Level 1                                   |                                                                          |         |
| ENGL 1110G                                                      | Composition I                                                            | 4       |
| or ENGL 1110H                                                   | Composition I Honors                                                     |         |
| English Composition - Level 2                                   |                                                                          |         |
| ENGL 2210G                                                      | Professional and Technical Communication                                 | 3       |
| or ENGL 2210H                                                   | Professional and Technical Communication                                 |         |
| Oral Communications                                             |                                                                          |         |
| COMM 1115G                                                      | Introduction to Communication                                            | 3       |
| or HNRS 2175G                                                   | Introduction to Communication Honors                                     |         |
| Area II: Mathematics                                            |                                                                          |         |
| MATH 1511G                                                      | Calculus and Analytic Geometry I <sup>2</sup>                            | 4       |
| or MATH 1511H                                                   | Calculus and Analytic Geometry I Honors                                  |         |
| Area III/IV: Laboratory Sciences and Social/Behavioral Sciences |                                                                          |         |
| CHEM 1215G                                                      | General Chemistry I Lecture and Laboratory for STEM Majors               | 4       |
| PHYS 1310G<br>& PHYS 1310L                                      | Calculus -Based Physics I<br>and Calculus -Based Physics I Lab           | 4       |
| ECON 2110G                                                      | Macroeconomic Principles                                                 | 3       |
| or ECON 2120G                                                   | Principles of Microeconomics Honors                                      |         |
| or ECON 2110H                                                   | Principles of Macroeconomics Honors                                      |         |
| or ECON 2120H                                                   | Principles of Microeconomics Honors                                      |         |
| Area V: Humanities <sup>1</sup>                                 |                                                                          | 3       |
| Area VI: Creative and Fine Arts <sup>1</sup>                    |                                                                          | 3       |
| General Education Elective                                      |                                                                          |         |
| MATH 1521G                                                      | Calculus and Analytic Geometry II<br>(Departmental/College Requirement ) | 4       |
| or MATH 1521H                                                   | Calculus and Analytic Geometry II Honors                                 |         |

|                                           |                                                             |          |
|-------------------------------------------|-------------------------------------------------------------|----------|
| <b>Viewing A Wider World <sup>3</sup></b> |                                                             | <b>6</b> |
| <b>Departmental/College Requirements</b>  |                                                             |          |
| <i>Mathematics</i>                        |                                                             |          |
| MATH 2530G                                | Calculus III                                                | 3        |
| MATH 3160                                 | Introduction to Ordinary Differential Equations             | 3        |
| STAT 3110                                 | Statistics for Engineers and Scientists                     | 3        |
| or I E 311                                | Engineering Data Analysis                                   |          |
| <i>Natural Science</i>                    |                                                             |          |
| GEOL 1110G                                | Physical Geology                                            | 4        |
| PHYS 1320G                                | Calculus -Based Physics II                                  | 4        |
| & PHYS 1320L                              | and Calculus -Based Physics II Lab                          |          |
| or CHEM 1225G                             | General Chemistry II Lecture and Laboratory for STEM Majors |          |
| <i>Technical</i>                          |                                                             |          |
| ENGR 190                                  | Introduction to Engineering Mathematics                     | 4        |
| ENGR 233                                  | Engineering Mechanics I                                     | 3        |
| ENGR 234                                  | Engineering Mechanics II                                    | 3        |
| E T 109                                   | Computer Drafting Fundamentals                              | 3        |
| SUR 222                                   | Introduction to Geomatics                                   | 3        |
| <i>Civil Engineering</i>                  |                                                             |          |
| C E 151                                   | Introduction to Civil Engineering                           | 3        |
| C E 256                                   | Environmental Engineering and Science                       | 4        |
| & 256 L                                   | and Environmental Science Laboratory                        |          |
| C E 301                                   | Mechanics of Materials                                      | 3        |
| C E 311                                   | Civil Engineering Materials                                 | 3        |
| C E 315                                   | Structural Analysis                                         | 4        |
| C E 331                                   | Fluid Mechanics and Hydraulics                              | 4        |
| & 331 L                                   | and Fluid Mechanics and Hydraulics Laboratory               |          |
| C E 356                                   | Fundamentals of Environmental Engineering                   | 3        |
| C E 357                                   | Soil Mechanics                                              | 3        |
| C E 382                                   | Hydraulic and Hydrologic Engineering                        | 3        |
| C E 445                                   | Reinforced Concrete Design                                  | 3        |
| C E 457                                   | Foundation Design                                           | 3        |
| C E 471                                   | Transportation Engineering                                  | 3        |
| C E 477                                   | Engineering Economics and Construction Management           | 3        |
| C E 497                                   | Senior Seminar                                              | 1        |
| <i>Elective Courses</i>                   |                                                             |          |
| Choose two from the following:            |                                                             | 6        |
| A EN 459                                  | Groundwater, Wells & Pumps                                  |          |
| A EN 478                                  | Irrigation and Drainage Engineering                         |          |
| C E 444                                   | Elements of Steel Design                                    |          |
| C E 452                                   | Geohydrology                                                |          |
| C E 454                                   | Wood Design                                                 |          |
| C E 455                                   | Masonry Design                                              |          |
| C E 460                                   | Site Investigation                                          |          |
| C E 469                                   | Structural Systems                                          |          |
| C E 470                                   | Design of Municipal and Hazardous Waste Landfills           |          |
| C E 479                                   | Pavement Analysis and Design                                |          |
| C E 482                                   | Hydraulic Structures                                        |          |
| C E 483                                   | Surface Water Hydrology                                     |          |
| C E 485                                   | Design of Earth Dams                                        |          |
| C E 510                                   | Introduction to Nondestructive Testing                      |          |
| C E 544                                   | Advanced Design of Steel Structures                         |          |
| C E 545                                   | Advanced Concrete Design                                    |          |
| ENVE 450                                  | Aquatic Chemistry                                           |          |

|                                                     |                                                  |            |
|-----------------------------------------------------|--------------------------------------------------|------------|
| ENVE 451                                            | Unit Processes/Operation of Water Treatment      |            |
| ENVE 452                                            | Unit Processes/Operation of Wastewater Treatment |            |
| ENVE 456                                            | Environmental Engineering Design                 |            |
| ENVE 487                                            | Air Pollution Control Systems Design             |            |
| <i>Capstone Design Course</i>                       |                                                  |            |
| C E 481                                             | Civil Engineering Capstone Design                | 3          |
| <b>Second Language: (not required)</b>              |                                                  |            |
| <b>Electives, to bring the total credits to 126</b> |                                                  | <b>0</b>   |
| <b>Total Credits</b>                                |                                                  | <b>126</b> |

<sup>1</sup> See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

<sup>2</sup> MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to complete prerequisite(s) prior to enrolling in this course depending on math placement.

<sup>3</sup> See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses.

## A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1511G Calculus and Analytic Geometry I or MATH 1511H Calculus and Analytic Geometry I Honors and ENGL 1110G Composition I or ENGL 1110H Composition I Honors. The contents and order of this roadmap may vary depending on initial student placement in mathematics and English. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change.

|                                                               |                                                                                                                                                                     |                |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>First Year</b>                                             |                                                                                                                                                                     |                |
| <b>Fall</b>                                                   |                                                                                                                                                                     | <b>Credits</b> |
| C E 151                                                       | Introduction to Civil Engineering <sup>1</sup>                                                                                                                      | 3              |
| CHEM 1215G                                                    | General Chemistry I Lecture and Laboratory for STEM Majors <sup>2</sup>                                                                                             | 4              |
| ENGL 1110G<br>or ENGL 1110H                                   | Composition I <sup>2</sup><br>or Composition I Honors                                                                                                               | 4              |
| ENGR 190                                                      | Introduction to Engineering Mathematics <sup>3</sup>                                                                                                                | 4              |
| <b>Credits</b>                                                |                                                                                                                                                                     | <b>15</b>      |
| <b>Spring</b>                                                 |                                                                                                                                                                     |                |
| E T 109                                                       | Computer Drafting Fundamentals <sup>4</sup>                                                                                                                         | 3              |
| GEOL 1110G                                                    | Physical Geology <sup>3</sup>                                                                                                                                       | 4              |
| MATH 1511G<br>or MATH 1511H                                   | Calculus and Analytic Geometry I <sup>2, 5</sup><br>or Calculus and Analytic Geometry I Honors                                                                      | 4              |
| PHYS 1310G<br>& PHYS 1310L                                    | Calculus -Based Physics I<br>and Calculus -Based Physics I Lab <sup>2</sup>                                                                                         | 4              |
| <b>Credits</b>                                                |                                                                                                                                                                     | <b>15</b>      |
| <b>Second Year</b>                                            |                                                                                                                                                                     |                |
| <b>Fall</b>                                                   |                                                                                                                                                                     |                |
| COMM 1115G<br>or HNRS 2175G                                   | Introduction to Communication <sup>2</sup><br>or Introduction to Communication Honors                                                                               | 3              |
| ECON 2110G<br>or ECON 2120G<br>or ECON 2110H<br>or ECON 2120H | Macroeconomic Principles <sup>2</sup><br>or Principles of Microeconomics Honors<br>or Principles of Macroeconomics Honors<br>or Principles of Microeconomics Honors | 3              |
| ENGL 2210G<br>or ENGL 2210H                                   | Professional and Technical Communication <sup>2</sup><br>or Professional and Technical Communication                                                                | 3              |

|                                                                                    |                                                                                                              |            |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------|
| ENGR 233                                                                           | Engineering Mechanics I <sup>2</sup>                                                                         | 3          |
| MATH 1521G<br>or MATH 1521H                                                        | Calculus and Analytic Geometry II <sup>2</sup><br>or Calculus and Analytic Geometry II Honors                | 4          |
| <b>Credits</b>                                                                     |                                                                                                              | <b>16</b>  |
| <b>Spring</b>                                                                      |                                                                                                              |            |
| C E 256<br>& 256 L                                                                 | Environmental Engineering and Science<br>and Environmental Science Laboratory <sup>3</sup>                   | 4          |
| C E 301                                                                            | Mechanics of Materials <sup>2</sup>                                                                          | 3          |
| C E 331                                                                            | Fluid Mechanics and Hydraulics                                                                               | 3          |
| C E 331 L                                                                          | Fluid Mechanics and Hydraulics Laboratory                                                                    | 1          |
| MATH 2530G                                                                         | Calculus III <sup>2</sup>                                                                                    | 3          |
| SUR 222                                                                            | Introduction to Geomatics <sup>3</sup>                                                                       | 3          |
| <b>Credits</b>                                                                     |                                                                                                              | <b>17</b>  |
| <b>Third Year</b>                                                                  |                                                                                                              |            |
| <b>Fall</b>                                                                        |                                                                                                              |            |
| C E 315                                                                            | Structural Analysis <sup>3</sup>                                                                             | 4          |
| C E 356                                                                            | Fundamentals of Environmental Engineering <sup>3</sup>                                                       | 3          |
| ENGR 234                                                                           | Engineering Mechanics II                                                                                     | 3          |
| STAT 3110<br>or I E 311                                                            | Statistics for Engineers and Scientists <sup>3</sup><br>or Engineering Data Analysis                         | 3          |
| Select a General Education Area V (Humanities) Course <sup>1, 5</sup>              |                                                                                                              | 3          |
| <b>Credits</b>                                                                     |                                                                                                              | <b>16</b>  |
| <b>Spring</b>                                                                      |                                                                                                              |            |
| C E 311                                                                            | Civil Engineering Materials <sup>3</sup>                                                                     | 3          |
| C E 357                                                                            | Soil Mechanics <sup>3</sup>                                                                                  | 3          |
| C E 382                                                                            | Hydraulic and Hydrologic Engineering <sup>3</sup>                                                            | 3          |
| PHYS 1320G<br>& PHYS 1320L<br>or CHEM 1225G                                        | Calculus -Based Physics II <sup>2</sup><br>or General Chemistry II Lecture and<br>Laboratory for STEM Majors | 4          |
| Select a General Education Area VI (Creative and Fine Arts) Course <sup>1, 6</sup> |                                                                                                              | 3          |
| <b>Credits</b>                                                                     |                                                                                                              | <b>16</b>  |
| <b>Fourth Year</b>                                                                 |                                                                                                              |            |
| <b>Fall</b>                                                                        |                                                                                                              |            |
| C E 445                                                                            | Reinforced Concrete Design <sup>3</sup>                                                                      | 3          |
| C E 477                                                                            | Engineering Economics and Construction Management <sup>7</sup>                                               | 3          |
| MATH 3160                                                                          | Introduction to Ordinary Differential Equations <sup>2</sup>                                                 | 3          |
| Select a A EN, C E, or ENVE Elective Course <sup>3, 8</sup>                        |                                                                                                              | 3          |
| Select a Viewing a Wider World (VWW) Course <sup>1, 9</sup>                        |                                                                                                              | 3          |
| <b>Credits</b>                                                                     |                                                                                                              | <b>15</b>  |
| <b>Spring</b>                                                                      |                                                                                                              |            |
| C E 457                                                                            | Foundation Design <sup>10</sup>                                                                              | 3          |
| C E 471                                                                            | Transportation Engineering <sup>10</sup>                                                                     | 3          |
| C E 481                                                                            | Civil Engineering Capstone Design                                                                            | 3          |
| C E 497                                                                            | Senior Seminar <sup>3</sup>                                                                                  | 1          |
| Select a A EN, C E, or ENVE Elective Course <sup>3, 8</sup>                        |                                                                                                              | 3          |
| Select a Viewing a Wider World (VWW) Course <sup>1, 9</sup>                        |                                                                                                              | 3          |
| <b>Credits</b>                                                                     |                                                                                                              | <b>16</b>  |
| <b>Total Credits</b>                                                               |                                                                                                              | <b>126</b> |

<sup>1</sup> Courses are typically taught in the Fall semester.

<sup>2</sup> Courses are typically taught in the Fall, Spring and Summer semesters.

<sup>3</sup> Courses are typically taught in the Fall and Spring semesters.

<sup>4</sup> See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog to see a full list of courses.

- <sup>5</sup> Math Placement: MATH 1511G Calculus and Analytic Geometry I is the starting Math course for the degree but students may need to complete any prerequisites prior to enrolling in this course depending on math placement.
- <sup>6</sup> See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses
- <sup>7</sup> Courses are typically taught in the Fall and Summer semesters.
- <sup>8</sup> See your advisor for more detailed information about selecting elective courses that are approved to fulfill this requirement.
- <sup>9</sup> Courses are typically taught in the Spring semester.