

SOIL SCIENCE (SOIL AND WATER SCIENCE) - BACHELOR OF SCIENCE IN AGRICULTURE

Soil scientists investigate the physical, chemical and biological characteristics and behavior of soils, their description and classification, and their management for both agricultural and non-agricultural uses. Career opportunities include: industry jobs; environmental consulting firms; and federal, state and local government careers working on various environmental, agricultural and ecological projects.

The soil and water science concentration is for students interested in careers in water management and water quality. Employment opportunities exist with irrigation districts, consulting firms, and government agencies dealing with water management and quality. The optimum use of water in semi-arid areas is emphasized through selection of courses in the technical and social sciences.

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework. In addition to the courses listed for each major, you must take 35 credits in the College of Agricultural, Consumer and Environmental Sciences and at least 24 credits of soil science related courses with a grade of C- or above including:

| Prefix | Title | Credits |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------|
| General Education | | |
| <i>Area I: Communications</i> | | |
| <i>English Composition - Level 1</i> ¹ | | 4 |
| <i>English Composition - Level 2</i> | | |
| ENGL 2210G | Professional & Technical Communication | 3 |
| <i>Oral Communication</i> ¹ | | 3 |
| <i>Area II: Mathematics</i> | | |
| Choose from one of the following: | | 3-4 |
| MATH 1430G | Applications of Calculus I ² | |
| MATH 1511G | Calculus and Analytic Geometry I ² | |
| <i>Area III/IV: Laboratory Science and Social/Behavioral Sciences</i> | | 11 |
| CHEM 1215G | General Chemistry I Lecture and Laboratory for STEM Majors | |
| CHEM 1225G | General Chemistry II Lecture and Laboratory for STEM Majors | |
| <i>Area IV: Social & Behavioral Sciences Course (3 credits)</i> ¹ | | |
| <i>Area V: Humanities</i> ¹ | | 3 |
| <i>Area VI: Creative and Fine Arts</i> ¹ | | 3 |
| <i>General Education Elective</i> | | |
| GEOL 1110G | Physical Geology | 4 |
| Viewing A Wider World ³ | | 6 |
| Departmental/College Requirements | | |
| SOIL 2110 & 2110L | Introduction to Soil Science and Introduction to Soil Science Laboratory | 4 |
| SOIL 312 & 312 L | Soil Management and Fertility and Soil Management and Fertility Lab | 4 |
| SOIL 447 | Seminar | 1 |
| Choose one SOIL Elective Course (300-level or above) | | 3 |

Select 12-13 credits from the following:

12-13

| | |
|-------------|------------------------------------|
| SOIL 424 | Soil Chemistry |
| or SOIL 479 | Environmental Soil Chemistry |
| SOIL 456 | Irrigation and Drainage |
| SOIL 472 | Soil Morphology and Classification |
| SOIL 476 | Soil Microbiology |
| SOIL 477 | Environmental Soil Physics |

*Concentration Coursework*⁴

Select at least one course from each of the following four categories to bring total concentration coursework to 30 credits

30

All course selections must in addition to the courses required under the Departmental/College and Non-Departmental Requirements sections listed above

Category 1: Crop Production & Protection

Course category areas are as follows:

| |
|-----------------|
| Agronomy |
| Entomology |
| Plant Pathology |
| Weed Science |
| Horticulture |

Category 2: Soil & Water Engineering Management

Course category areas are as follows:

| |
|--------------------------|
| Agricultural Engineering |
| Agricultural Economics |
| Civil Engineering |
| Environmental Sciences |
| Horticulture |
| Soil |

Category 3: Ecology

Course category areas are as follows:

| |
|------------------|
| Biology |
| Geography |
| Geology |
| Range Science |
| Soil |
| Waste-Management |
| Wildlife Science |

Category 4: Advanced Science, Computing & Statistics

Course category areas are as follows:

| |
|----------------------------------|
| Math |
| Chemistry |
| Physics |
| Computer-Oriented |
| Statistics or Applied Statistics |

Non-Departmental Requirements (in addition to Gen.Ed/VWW)

| | | |
|------------|------------------------------------------------------------------------|---|
| CHEM 2115 | Survey of Organic Chemistry and Laboratory (or above except CHEM 310V) | 4 |
| PHYS 1230G | Algebra-Based Physics I | 3 |

Choose two from the following (lab is NOT required for this major):

6

| | |
|------------|-------------------------------------------------------------|
| BIOL 2610G | Principles of Biology: Biodiversity, Ecology, and Evolution |
| BIOL 2110G | Principles of Biology: Cellular and Molecular Biology |
| BIOL 311 | General Microbiology |

Second Language: (not required)

Electives, to bring the total credits to 120⁵

11-13

Total Credits

120

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

² MATH 1430G Applications of Calculus I or MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites to enter either course first.

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

⁴ Please see your academic advisor for a list of appropriate courses to satisfy the concentration coursework requirements.

⁵ Elective credit may vary based on prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However, students may end up needing to complete more or less on a case-by-case basis and students should discuss elective requirements with their advisor.

A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1430G Applications of Calculus I and ENGL 1110G Composition I. 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.

First Year

| Fall | | Credits |
|-------------------------------------------------------------|-------------------------------------------------------------|--------------|
| ENGL 1110G | Composition I | 4 |
| Elective Course ¹ | | 2 |
| ACES 1120 | Freshman Orientation (recommended) | |
| ACES 1210 | Financial Fitness for College Students (recommended) | |
| Choose one from the following: ² | | 3 |
| BIOL 2110G | Principles of Biology: Cellular and Molecular Biology | |
| BIOL 2610G | Principles of Biology: Biodiversity, Ecology, and Evolution | |
| Choose one from the following: ³ | | 3-4 |
| MATH 1430G | Applications of Calculus I | |
| MATH 1511G | Calculus and Analytic Geometry I | |
| Area V: Humanities Course ² | | 3 |
| Credits | | 15-16 |
| Spring | | |
| GEOL 1110G | Physical Geology | 4 |
| Concentration Category Course: Category 1 or 2 ⁴ | | 4 |
| ACOM 1130G | Effective Leadership and Communication in Agriculture | 3 |
| Area VI: Creative and Fine Arts Course ⁵ | | 3 |
| Elective Course ¹ | | 3 |
| Credits | | 17 |

Second Year

| Fall | | |
|------------|------------------------------------------------------------|---|
| CHEM 1215G | General Chemistry I Lecture and Laboratory for STEM Majors | 4 |
| CHEM 1121 | General Supplemental Instruction I | 1 |

| Viewing a Wider World ⁶ | | 3 |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------|
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 4 |
| Choose one from the following: ² | | 3 |
| BIOL 2110G | Principles of Biology: Cellular and Molecular Biology ⁴ | |
| BIOL 2610G | Principles of Biology: Biodiversity, Ecology, and Evolution | |
| BIOL 311 | General Microbiology | |
| Elective Course ¹ | | 3 |
| Credits | | 18 |
| Spring | | |
| CHEM 1225G | General Chemistry II Lecture and Laboratory for STEM Majors | 4 |
| CHEM 1122 | General Supplemental Instruction II | 1 |
| SOIL 2110 & 2110L | Introduction to Soil Science and Introduction to Soil Science Laboratory | 4 |
| ENGL 2210G or ENGL 2215G | Professional & Technical Communication or Advanced Technical and Professional Communication | 3 |
| Elective Course ¹ | | 3-4 |
| Credits | | 15-16 |
| Third Year | | |
| Fall | | |
| SOIL 472 | Soil Morphology and Classification | 4 |
| Viewing a Wider World Course ⁶ | | 3 |
| Area IV: Social/Behavioral Sciences Course ⁵ | | 3 |
| Concentration Category Course: Category 4 ⁴ | | 3 |
| PHYS 1230G | Algebra-Based Physics I | 3 |
| Credits | | 16 |
| Spring | | |
| SOIL 456 or SOIL 476 | Irrigation and Drainage or Soil Microbiology | 3 |
| SOIL 424 | Soil Chemistry | 3 |
| CHEM 2115 | Survey of Organic Chemistry and Laboratory | 4 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Credits | | 16 |
| Fourth Year | | |
| Fall | | |
| SOIL 477 | Environmental Soil Physics | 3 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Credits | | 12 |
| Spring | | |
| SOIL 447 | Seminar | 1 |
| SOIL 312 & 312 L | Soil Management and Fertility and Soil Management and Fertility Lab | 4 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Concentration Category Course: Categories 1, 2, 3, or 4 ⁴ | | 3 |
| Credits | | 11 |
| Total Credits | | 120-122 |

¹ Elective credit may vary based on prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However, students may end up needing to complete more or less on a case-by-

case basis and students should discuss elective requirements with their advisor.

² Students must two courses from the following, to fulfill degree requirements:

- BIOL 2110G Principles of Biology: Cellular and Molecular Biology
- BIOL 2610G Principles of Biology: Biodiversity, Ecology, and Evolution
- BIOL 311 General Microbiology

³ The degree requires wither MATH 1430G Applications of Calculus I or MATH 1511G Calculus and Analytic Geometry I, students who do not test into these courses will have additional MATH courses to complete in this semester and where "Elective Courses" are listed in the Roadmap.

⁴ Please see your academic advisor for a list of appropriate courses to satisfy the concentration coursework requirements.

⁵ See the General Education (<http://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses

⁶ See the Viewing a Wider World (<http://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses