

# SOIL SCIENCE (SOILS) - 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.

Crop production and plant growth are emphasized in the soils concentration. Soil management, soil conservation, and soil reclamation are related to plant growth for those students interested in both private industry and government employment opportunities as well as farm management.

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 |
|--|--|---------|
| <b>General Education</b>   |  |         |
| <i>Area I: Communications</i>  |  |         |
| <i>English Composition - Level 1</i> <sup>1</sup>                                |  | 4       |
| <i>English Composition - Level 2</i>   |  |         |
| ENGL 2210G   | Professional and Technical Communication Honors                          | 3       |
| <i>Oral Communication</i> <sup>1</sup>   |  | 3       |
| <i>Area II: Mathematics</i>  |  |         |
| Choose from one of the following:  |  | 3-4     |
| MATH 1430G   | Applications of Calculus I <sup>2</sup>                                  |         |
| MATH 1511G   | Calculus and Analytic Geometry I <sup>2</sup>                            |         |
| <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 &amp; Behavioral Sciences Course (3 credits)</i> <sup>1</sup> |  |         |
| <i>Area V: Humanities</i> <sup>1</sup>   |  | 3       |
| <i>Area VI: Creative and Fine Arts</i> <sup>1</sup>                              |  | 3       |
| <i>General Education Elective</i>  |  |         |
| GEOL 1110G   | Physical Geology   | 4       |
| <b>Viewing A Wider World</b> <sup>3</sup>  |  | 6       |
| <b>Departmental/College Requirements</b>   |  | 24      |
| SOIL 2110 & 2110L  | Introduction to Soil Science and Introduction to Soil Science Laboratory |         |
| SOIL 312 & 312 L   | Soil Management and Fertility and Soil Management and Fertility Lab      |         |
| SOIL 447   | Seminar  |         |
| Choose 15 credits of SOIL Courses (300-level or above)                           |  |         |

|   |   |       |
|---|---|-------|
| 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 476 L  | Soil Microbiology Laboratory  |       |
| SOIL 477  | Environmental Soil Physics  |       |
| SOIL 477 L  | Environmental Soil Physics Laboratory   |       |
| <i>Concentration Coursework</i> <sup>4</sup>  |   |       |
| 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 |   |       |
| <i>Category 1: Crop Production &amp; Protection</i>   |   |       |
| Course category areas are as follows:   |   |       |
| Agronomy  |   |       |
| Entomology  |   |       |
| Plant Pathology   |   |       |
| Weed Science  |   |       |
| Horticulture  |   |       |
| <i>Category 2: Plant Biology &amp; Ecology</i>  |   |       |
| Course category areas are as follows:   |   |       |
| Biology   |   |       |
| Rangeland Resources   |   |       |
| <i>Category 3: Soil, Water &amp; Agricultural Business Management</i>   |   |       |
| Course category areas are as follows:   |   |       |
| Agricultural Economics  |   |       |
| Geography   |   |       |
| Economic Geology  |   |       |
| Range Science   |   |       |
| Soil  |   |       |
| <i>Category 4: Advanced Science, Computing &amp; Statistics</i>   |   |       |
| Course category areas are as follows:   |   |       |
| Math  |   |       |
| Chemistry   |   |       |
| Physics   |   |       |
| Computer-Oriented   |   |       |
| Statistics or Applied Statistics  |   |       |
| <b>Non-Departmental Requirements (in addition to Gen.Ed/VWW)</b>  |   |       |
| CHEM 2120   | Integrated Organic Chemistry and Biochemistry (CHEM 2120 must be taken with associated 1-cr CHEM lab) | 3     |
| or ANSC 1170  | Introduction to Animal Metabolism   |       |
| 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 311  | General Microbiology  |       |
| BIOL 2110G  | Principles of Biology: Cellular and Molecular Biology   |       |
| <b>Second Language: (not required)</b>  |   |       |
| <b>Electives, to bring the total credits to 120</b> <sup>5</sup>  |   | 12-14 |
| <b>Total Credits</b>  |   | 120   |

<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 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.

<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

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

<sup>5</sup> 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 1220G College Algebra 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

| Semester 1   |   | Credits   |
|--|---|-----------|
| MATH 1220G   | College Algebra <sup>1</sup>                          | 3         |
| ACOM 1130G   | Effective Leadership and Communication in Agriculture | 3         |
| GEOL 1110G   | Physical Geology                                      | 4         |
| ACES 1120  | Freshman Orientation                                  | 1         |
| ACES 1210  | Financial Fitness for College Students                | 1         |
| Area IV: Social and Behavioral Science Course <sup>2</sup> |   | 3         |
| <b>Credits</b>   |   | <b>15</b> |

| Semester 2     |  | Credits   |
|----------------|--|-----------|
| MATH 1430G     | Applications of Calculus I <sup>1</sup>  | 3         |
| ENGL 1110G     | Composition I <sup>1</sup>   | 4         |
| CHEM 1215G     | General Chemistry I Lecture and Laboratory for STEM Majors <sup>1</sup>        | 4         |
| CHEM 1121      | General Supplemental Instruction I   | 1         |
| BIOL 2610G     | Principles of Biology: Biodiversity, Ecology, and Evolution (Lab not required) | 3         |
| <b>Credits</b> |  | <b>15</b> |

### Second Year

| Semester 1        |   | Credits   |
|-------------------|---|-----------|
| PHYS 1230G        | Algebra-Based Physics I   | 3         |
| BIOL 2110G        | Principles of Biology: Cellular and Molecular Biology (Lab not required)              | 3         |
| SOIL 2110 & 2110L | Introduction to Soil Science and Introduction to Soil Science Laboratory <sup>1</sup> | 4         |
| CHEM 1225G        | General Chemistry II Lecture and Laboratory for STEM Majors <sup>1</sup>              | 4         |
| CHEM 1122         | General Supplemental Instruction II   | 1         |
| <b>Credits</b>    |   | <b>15</b> |

| Semester 2                             |  | Credits |
|--|--|---------|
| ENGL 2210G                             | Professional and Technical Communication Honors <sup>1</sup> | 3       |
| Area V: Humanities Course <sup>2</sup> |  | 3       |

|   |   |
|---|---|
| Area VI: Creative and Fine Arts Course <sup>2</sup> | 3 |
| Soils Option Course                                 | 3 |
| Soils Option Course                                 | 3 |

**Credits 15**

### Third Year

| Semester 1             |  | Credits      |
|------------------------|--|--------------|
| SOIL 472               | Soil Morphology and Classification <sup>1</sup>  | 4            |
| Soils Option Courses   |  | 6            |
| CHEM 2120 or ANSC 1170 | Integrated Organic Chemistry and Biochemistry (CHEM 2120 must be taken with associated 1-cr CHEM lab) or Introduction to Animal Metabolism | 3            |
| Electives              |  | 2-3          |
| <b>Credits</b>         |  | <b>15-17</b> |

### Semester 2

|                     |                               |           |
|---------------------|-------------------------------|-----------|
| SOIL 312            | Soil Management and Fertility | 3         |
| SOIL 424            | Soil Chemistry                | 3         |
| Soils Option Course |                               | 3         |
| Soils Option Course |                               | 3         |
| Elective            |                               | 3         |
| <b>Credits</b>      |                               | <b>15</b> |

### Fourth Year

| Semester 1                                     |  | Credits   |
|--|--|-----------|
| SOIL 477 & 477 L                               | Environmental Soil Physics and Environmental Soil Physics Laboratory | 4         |
| VWW: Viewing a Wider World Course <sup>3</sup> |  | 3         |
| Soils Option Course                            |  | 3         |
| Soils Option Course                            |  | 3         |
| Soils Option Course                            |  | 3         |
| <b>Credits</b>                                 |  | <b>16</b> |

### Semester 2

|                     |                         |           |
|---------------------|-------------------------|-----------|
| SOIL 456            | Irrigation and Drainage | 3         |
| SOIL 447            | Seminar                 | 1         |
| SOIL 476            | Soil Microbiology       | 3         |
| SOIL 391            | Internship              | 3         |
| Soils Option Course |                         | 3         |
| Soils Option Course |                         | 3         |
| <b>Credits</b>      |                         | <b>16</b> |

**Total Credits 122-124**

<sup>1</sup> These courses have prerequisites and it is the students responsibility for checking and fulfilling all course prerequisites listed for these courses

<sup>2</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>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.