SOIL 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

SOIL 252. Soils
3 Credits
Origin, classification, morphology, and physical, chemical, and biological properties of soils. 
Prerequisite: CHEM 111G and CHEM 112G.

SOIL 252 L. Soils Laboratory
1 Credit
Morphological, chemical, physical and biological properties of soil in the laboratory and field. 
Corequisite: SOIL 252.

SOIL 257. Introduction to Weather Science
4 Credits (3+3P)
Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Consent of instructor required. Crosslisted with: GEOG 257 and AGRO 257

SOIL 300. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

SOIL 312. Soil Management and Fertility
3 Credits
Management, conservation, and fertility of soils; physical conditions affecting growth, nutrition, and plant production. 
Prerequisite: SOIL 252.
Corequisite: SOIL 312L.

SOIL 312 L. Soil Management and Fertility Lab
1 Credit
Hands-on experience. Includes field trips, videos, calculations, visiting lecturers and other lab activities as possible. 
Prerequisite: SOIL 252.
Corequisite: SOIL 312.

SOIL 350. Soils and Land Use
3 Credits (2+2P)
Relationship of soils to the limitations and potentials of land use. Emphasis on soil interpretations and soils as a resource in urban, rural, and recreational development. Same as PLAN 350.

SOIL 357. Climatology
3 Credits
Elements and controls of climate. Energy and hydrologic cycles, general circulation, climate classification, distribution of climate types, microscale effects, applications. Same as AGRO/GEOG 357. 
Prerequisites: MATH 120.

SOIL 370. Environmental Soil Science
3 Credits
Continuation of SOIL 252 that emphasizes soil properties and processes that directly relate to environmental pollution problems. Same as ES 370. 
Prerequisite: SOIL 252.

SOIL 391. Internship
1-6 Credits (1-6)
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).

SOIL 424. Soil Chemistry
3 Credits
Basic elements of soil chemistry including clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479. 
Prerequisite(s): SOIL 252L or CHEM 111G and 112G.

SOIL 447. Seminar
1 Credit
Organization, preparation, and presentation of current topics in agronomy, horticulture, and soil science. Same as AGRO/HORT 447.

SOIL 449. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

SOIL 450. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits towards a degree. May be repeated up to 9 credits. Consent of Instructor required.

SOIL 456. Irrigation and Drainage
3 Credits
Principles and practices required for irrigation to exist as a permanent economy. Equipment and methods for measurement and control of water.

SOIL 472. Soil Morphology and Classification
4 Credits (2+2P)
Terminology used to describe soils. Soil classification systems of the world with emphasis on systems used in the United States. Theory of classification and taxonomy as applied to soils. Same as GEOG 472. 
Prerequisite: SOIL 252.

SOIL 476. Soil Microbiology
3 Credits
Nature and physiology of soil microorganisms, how they affect plant growth and recycle nutrients. Land farming, bioremediation and other environmental problems as influenced by soil microorganisms. SOIL 252 and BIOL 311 recommended. Same as BIOL 476.

SOIL 476 L. Soil Microbiology Laboratory
1 Credit
Enumeration of soil microorganisms, their activities, and transformations they mediate. Same as BIOL 476L. 
Prerequisites: SOIL 476 or concurrent enrollment.
SOIL 477. Environmental Soil Physics
3 Credits
A description of the physical characteristics of porous media including soil. Examination of processes describing the transport of water, chemicals, heat and gases through porous media with application to environmental quality, waste management, and crop production.

SOIL 477 L. Environmental Soil Physics Laboratory
1 Credit
Concurrent enrollment with SOIL 477 recommended. Hands on experience with techniques for characterizing soil physical properties such as particle size distribution, bulk density, water retention, hydraulic conductivity and solute transport. Demonstrations of field and laboratory techniques for measuring moisture content, soil water potential, gas/air flow and thermal conductivity.
Prerequisite: SOIL 252.

SOIL 479. Environmental Soil Chemistry
3 Credits
Basic elements of soil chemistry including discussion of clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479.
Prerequisite(s): SOIL 252L or CHEM 111G and 112G.

SOIL 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, HORT 486, E S 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

SOIL 500. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

SOIL 505. Research Orientation
4 Credits (3+2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: AGRO 505 and HORT 505

SOIL 514. Soil-Plant Relationships
3 Credits
Physical, chemical, and biological soil environment as it affects plant and crop growth. Same as AGRO/HORT 514.
Prerequisites: BIOL 314, SOIL 252.

SOIL 525. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: AGRO 525, AGRO 625, HORT 525, HORT 625, SOIL 625 and EPWS 525.

SOIL 590. Graduate Seminar
1 Credit
Current research discussions presented by master level graduate students. Not more than one credit toward the degree. Same as AGRO/HORT 590. Crosslisted with: AGRO 590 and HORT 590.

SOIL 596. Masters Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: AGRO 596, E S 596, GENE 596 and HORT 596. Restricted to: Masters HORT; Masters PLEN majors.
Corequisite(s): Master level graduate students.

SOIL 597. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. Consent of instructor required. Crosslisted with: AGRO 597 and HORT 597.

SOIL 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

SOIL 600. Doctoral Research
1-15 Credits
Research.

SOIL 625. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 625 course will be required to perform additional research than those students in the 525 cross-listing Crosslisted with: AGRO 525, HORT 525 and EPWS 525.

SOIL 630. Advanced Soil Classification
3 Credits
Philosophy and organization of various soil classification systems, some international in scope, with emphasis on the new USDA system and classroom and field experience in using this system.
Prerequisite: SOIL 472 or consent of instructor.

SOIL 640. Advanced Soil Microbiology
3 Credits
Advanced topics in soil microbiology and biochemistry, including carbon cycling, nitrogen cycling, humus formation and nature, and microbial-plant root interactions. Consent of instructor required.

SOIL 650. Advanced Topics
1-3 Credits
Colloquium on contemporary topics associated with agriculture, environmental science and engineering. Multidisciplinary topics will be chosen to encourage participation of students from diverse disciplines. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.

SOIL 652. Advanced Soil Physics
3 Credits
Advanced treatment of soil physics, modeling, includes working on an existing/new research project, modeling existing or new data, step by step guide on the use of some 1-D and 2-D models. Specific areas of specialization will be field scale variability of soil properties, water flow, solute transport, and plant water relations.
Prerequisite(s): SOIL 477 and computer literacy; or consent of instructor.
SOIL 655. Moisture Heat Contaminant Transport Modeling
3 Credits
Provides clear coverage of the basic principles of heat, moisture and contaminant transport through porous media, and a step-by-step guidance and hands on application on the use of some spreadsheet based and physically based one-and two-dimensional transport models. A similar course does not exist in the college for students that can encourage them to pursue modeling as a means of solving vadose zone and groundwater contamination and remediation problems. Consent of instructor required. Pre/ Corequisite(s): Graduate student with at least two 400.

SOIL 694. Doctoral Seminar
1 Credit
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Same as AGRO 694. Prerequisite: doctoral level graduate students.

SOIL 696. Doctoral Proposal
1 Credit
Current research proposal written by doctoral level graduate students. Not more than 1 credit toward the degree. Same as AGRO 696. Prerequisite: doctoral level graduate students.

SOIL 697. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures. Consent of instructor required. Crosslisted with: AGRO 697 and HORT 697

SOIL 698. Topics in Agronomy
1-6 Credits
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.