

## **Biological Sciences (series 0401)**

### *Basic Requirements:*

- A. Degree: biological sciences, agriculture, natural resource management, chemistry, or related disciplines appropriate to the position.

OR

- B. Combination of education and experience--Courses equivalent to a major, as shown in A above, plus appropriate experience or additional education.

## **Biological Science Technician (series 0404)**

*Specialized Experience (for positions at GS-4 and above):* Experience must have been related to the work of the position for which application is made. The specialized experience required for some positions in this series is normally work performed in a controlled environment. Examples of qualifying specialized experience include:

- Research activity or control program work.
- Nursery work that required the growing and maintenance of plants in a controlled environment.
- Work comparable to that with a large dairy farm where production records, animal environment, and sanitary conditions were kept in accordance with modern dairy practice.

Farming experience that was not performed in a controlled environment, or experience as a laborer who was not responsible for planning and scheduling his/her own work, but only performed assigned tasks, would not qualify as specialized experience.

OR

### *Education and Training:*

*For GS-3:* Successful completion of 1 year of study that included at least 6 semester hours in any combination of scientific or technical courses such as biology, chemistry, statistics, entomology, animal husbandry, botany, physics, agriculture, or mathematics.

*For GS-4:* Successful completion of 2 years of study that included at least 12 semester hours in any combination of courses such as those shown above for GS-3. At least 6 semester hours of courses must be directly related to the position to be filled.

*For GS-5:* Successful completion of a full 4-year course of study leading to a bachelor's degree with major study or at least 24 semester hours in any combination of courses such as those shown above for GS-3. At least 6 semester hours of courses must have been directly related to the position to be filled. The successful completion of a full course of study of at least 12 months in a school for clinical laboratory technicians may be substituted for the 1 year of specialized

experience required at the GS-5 level for positions involving microbiology and biochemistry technician work.

**Ecology (series 0408)**

*Basic Requirements:* Degree: biology, or a related field of science underlying ecological research that included at least 30 semester hours in basic and applied biological sciences. These hours must have included at least 9 semester hours in ecology, and 12 semester hours in physical and mathematical sciences.

**Botany (series 0430)**

*Basic Requirements:*

- A. Degree: botany; or basic plant science that included at least 24 semester hours in botany.

OR

- B. Combination of education and experience--courses equivalent to a major in botany or basic plant science that included at least 24 semester hours in botany, as shown in A above, plus appropriate experience or additional education.

For positions dealing with the study of fungi, or with basic mycological relationships, the course work in botany must have included at least 6 semester hours in mycology.

*Evaluation of Education:* Courses in basic botany, plant anatomy or morphology, cytology, histology, genetics, taxonomy or systematics, algology, mycology, ethnobotany, and those dealing with specific problems of a botanical nature or with specific groups of plants are qualifying. The courses required for mycologists are specific and must have been in mycology.

**Rangeland Management (series 0454)**

*Basic Requirements:*

- A. Degree: range management; or a related discipline that included at least 42 semester hours in a combination of the plant, animal, and soil sciences, and natural resources management, as follows:
  - o *Range Management*--At least 18 semester hours of course work in range management, including courses in such areas as basic principles of range management, range plants, range ecology, range inventories and studies, range improvements, and ranch or rangeland planning.
  - o *Directly Related Plant, Animal, and Soil Sciences*--At least 15 semester hours of directly related courses in the plant, animal, and soil sciences, including at least one course in each of these three scientific areas, i.e., plant, animal, and soil sciences. Courses in such areas as plant taxonomy, plant physiology, plant

ecology, animal nutrition, livestock production, and soil morphology or soil classification are acceptable.

- *Related Resource Management Studies*--At least 9 semester hours of course work in related resource management subjects, including courses in such areas as wildlife management, watershed management, natural resource or agricultural economics, forestry, agronomy, forages, and outdoor recreation management.

OR

- B. Combination of education and experience--at least 42 semester hours of course work in the combination of plant, animal, and soil sciences and natural resources management shown in A above, plus appropriate experience or additional education.

### **Range Technician (series 0455)**

*Specialized Experience (for positions at GS-4 and above):* In addition to the experience requirements described in the group coverage standard, seasonal experience may also be creditable. A season of experience is considered to be a period of no less than 3 months of continuous employment on a seasonal basis. Shorter periods may be combined to make a season, provided a total of at least 3 months' experience is shown. For any period where the work exceeded 3 months, the excess work is credited towards an additional season of experience. One season of experience is qualifying for GS-2; 2 seasons of experience qualify for GS-3; and 4 seasons of experience qualify for GS-4. Examples of qualifying specialized experience include:

- Work in the conservation, regulation, and use of public or Federally controlled lands for grazing.
- Range research activities.
- Work in the operation of a livestock ranch or in assisting in the management or preservation of lands comparable to the public range.
- Range or forest fire control, prevention, or suppression work.

OR

#### *Education and Training:*

*For GS-3:* Successful completion of 1 year of study that included at least 6 semester hours in a combination of courses such as range management or conservation, agriculture, forestry, wildlife management, engineering, biology, mathematics, or other natural or physical sciences.

*For GS-4:* Successful completion of 2 years of study that included at least 12 semester hours in any combination of courses such as forestry, agriculture, crop or plant science, range management or conservation, wildlife management, watershed management, soil science, natural resources (except marine fisheries and oceanography), outdoor recreation management, civil or forest engineering, or wildland fire science. No more than 3 semester hours in mathematics is credit-able.

*For GS-5:* Successful completion of a full 4-year course of study leading to a bachelor's degree

(a) with major study in forestry, range management, agriculture, or a subject-matter field directly related to the position, or (b) that included at least 24 semester hours in any combination of courses such as those shown above For GS-4. No more than 6 semester hours in mathematics is creditable.

### **Soil Conservation (0457)**

#### *Basic Requirements:*

A. Degree: soil conservation or related agricultural or natural resource discipline such as agronomy, soil science, forestry, agricultural education, or agricultural engineering. The study must have included 30 semester hours in a natural resource or agricultural field, including at least 12 semester hours in a combination of soils and crops or plant science. Of the 12 semester hours, a minimum of 3 semester hours must have been in soils and 3 semester hours in crops or plant science.

OR

B. Combination of education and experience--at least 30 semester hours in one or more of the disciplines as shown in A above, including at least 12 semester hours in a combination of soils and crops or plant science, plus appropriate experience or additional education. Of the 12 semester hours, a minimum of 3 semester hours must have been in soils and 3 semester hours in crops or plant science.

*Evaluation of Education:* Education that provided specialized knowledge and skills in soil and water conservation is more valuable than education that imparted broad but general knowledge and skills. Courses in soil fertility, soil chemistry, soil genesis, plant physiology, plant science, and field crops are examples of specialized courses that contribute towards meeting the required 12 semester hours as described above. Courses in the physical sciences or engineering such as geology, civil engineering, and hydrology also meet the soils, crops, or plant science course requirements where such courses included a complete introduction to the physical, chemical, and biological properties of soils.

*Evaluation of Experience:* Experience that included the application of techniques, principles, and methods from a variety of agricultural and natural resource fields is appropriate, given the interdisciplinary character of the soil conservation occupation. For example, experience gained in a specialized field such as soil science, forestry, or agronomy is as fully acceptable as experience directly obtained in soil conservation work.

### **Soil Conservation Technician (series 0458)**

*Specialized Experience (for positions at GS-4 and above):* In addition to the experience requirements described in the group coverage standard, seasonal experience may also be creditable. A season of experience is considered to be a period of no less than 3 months of continuous employment on a seasonal basis. Shorter periods may be combined to make a season, provided a total of at least 3 months' experience is shown. For any period where the work

exceeded 3 months, the excess work is credited towards an additional season of experience. One season of experience is qualifying for GS-2; 2 seasons of experience qualify for GS-3; and 4 seasons of experience qualify for GS-4. Examples of qualifying specialized experience include:

- Installing and maintaining conservation measures on public or privately owned land including parks, shoreline, refuse waste sites, dams and reservoir areas, water and sewer sites, road embankments, forests, and wildlife habitats.
- Installing and maintaining soil and water conservation measures on farms, ranches, or agricultural land.

OR

*Education and Training:*

*For GS-3:* Successful completion of 1 year of study that included at least 6 semester hours in a combination of courses such as range management or conservation, agriculture, forestry, wildlife management, engineering, biology, mathematics, or other natural or physical sciences.

*For GS-4:* Successful completion of 2 years of study that included at least 12 semester hours in any combination of courses such as forestry, agriculture, crop or plant science, range management or conservation, wildlife management, watershed management, soil science, natural resources (except marine fisheries and oceanography), outdoor recreation management, civil or forest engineering, or wildland fire science. No more than 3 semester hours in mathematics is creditable.

*For GS-5:* Successful completion of a full 4-year course of study leading to a bachelor's degree (a) with major study in forestry, range management, agriculture, or a subject-matter field directly related to the position, or (b) that included at least 24 semester hours in any combination of courses such as those shown above For GS-4. No more than 6 semester hours in mathematics is creditable.

**Forestry (series 0460)**

Degree: forestry; or a related subject-matter field that included a total of at least 30 semester hours in any combination of biological, physical, or mathematical sciences or engineering, of which at least 24 semester hours of course work were in forestry. The curriculum must have been sufficiently diversified to include courses in each of the following areas:

- *Management of Renewable Resources*--study of the science and art of managing renewable resources to attain desired results. Examples of creditable courses in this area include silviculture, forest management operations, timber management, wildland fire science or fire management, utilization of forest resources, forest regulation, recreational land management, watershed management, and wildlife or range habitat management.
- *Forest Biology*--study of the classification, distribution, characteristics, and identification of forest vegetation, and the interrelationships of living organisms to the forest environment. Examples of creditable courses in this area include dendrology, forest

ecology, silvics, forest genetics, wood structure and properties, forest soils, forest entomology, and forest pathology.

- *Forest Resource Measurements and Inventory*--sampling, inventory, measurement, and analysis techniques as applied to a variety of forest resources. Examples of creditable courses include forest biometrics, forest mensuration, forest valuation, statistical analysis of forest resource data, renewable natural resources inventories and analysis, and photogrammetry or remote sensing.

#### Forestry Technician (series 0462)

*Specialized Experience (for positions at GS-4 and above):* In addition to the experience requirements described in the group coverage standard, seasonal experience may also be creditable. A season of experience is considered to be a period of no less than 3 months of continuous employment on a seasonal basis. Shorter periods may be combined to make a season, provided a total of at least 3 months' experience is shown. For any period where the work exceeded 3 months, the excess work is credited towards an additional season of experience. One season of experience is qualifying for GS-2; 2 seasons of experience qualify for GS-3; and 4 seasons of experience qualify for GS-4. Examples of qualifying specialized experience include:

- Forestry aid or technician work.
- Engineering, range, or soil conservation technician work that involved the application of cultural, resource conservation, or land management practices on nonforest or ranch lands when combined with knowledge of forestry operations and equipment.
- Farming or ranching work that involved application of cultural and soil and water conservation practices, including safety and use of equipment, and that provided a basic understanding of land use.
- Forest or range fire control, prevention, or suppression work.

OR

#### *Education and Training:*

*For GS-3:* Successful completion of 1 year of study that included at least 6 semester hours in a combination of courses such as range management or conservation, agriculture, forestry, wildlife management, engineering, biology, mathematics, or other natural or physical sciences.

*For GS-4:* Successful completion of 2 years of study that included at least 12 semester hours in any combination of courses such as forestry, agriculture, crop or plant science, range management or conservation, wildlife management, watershed management, soil science, natural resources (except marine fisheries and oceanography), outdoor recreation management, civil or forest engineering, or wildland fire science. No more than 3 semester hours in mathematics is creditable.

*For GS-5:* Successful completion of a full 4-year course of study leading to a bachelor's degree (a) with major study in forestry, range management, agriculture, or a subject-matter

field directly related to the position, or (b) that included at least 24 semester hours in any combination of courses such as those shown above for GS-4. No more than 6 semester hours in mathematics is creditable.