1800.3910 EDUCATION AND EXPERIENCE.

Subpart 1. **Examination requirement.**

A. An applicant for licensure within a geoscience discipline shall pass examinations as provided in part 1800.3920.

B. An applicant for licensure under part 1800.0800, item I, whose original licensure in the other state was granted after August 4, 1997, shall satisfy the Minnesota licensing requirements that were in effect at the time of the applicant's original licensure in the other state. An applicant for licensure under part 1800.0800, item I, whose original licensure in the other state was granted before August 4, 1997, shall satisfy the Minnesota licensing requirements that were in effect on August 4, 1997.

C. The Fundamentals of Geology (FG) examination or Fundamentals of Soil Science (FSS) examination must be waived by the board if the applicant requests a waiver and furnishes evidence of the following:

(1) having a doctorate degree in the geoscience discipline for which the applicant is seeking licensure or equivalent doctorate degree as determined by the board; and

(2) meeting the education requirements specified in subpart 5.

Subp. 2. **Admission to written fundamentals examination.** To qualify for admission to the written fundamentals examination for a geoscience discipline, the applicant shall present evidence of the following:

A. graduation from a geoscience curriculum approved by the board, as specified in subpart 5, in the geoscience discipline for which the applicant is seeking licensure;

B. enrollment in a geoscience curriculum approved by the board, as specified in subpart 5, and:

(1) for geology, completion of 20 semester or 30 quarter credits in geology, as specified in subpart 5; or

(2) for soil science, completion of 12 semester or 18 quarter credits in soil science and ten semester or 16 quarter credits in closely related geoscience or environmental science areas, as specified in subpart 5; or

C. graduation from a non-board-approved curriculum with a minimum number of equivalent credits in geoscience as specified in subpart 5.

Subp. 3. **Admission to professional examination.** To qualify for admission to the professional examination for a geoscience discipline, the applicant shall present evidence of meeting the education and qualifying experience requirements in items A and B.

A. Education:

(1) graduation from a geoscience curriculum approved by the board, as specified in subpart 5, in the geoscience discipline for which the applicant is seeking licensure;

(2) graduation from a non-board-approved curriculum with a minimum number of equivalent credits in geoscience as specified in subpart 5; or

(3) graduation from a foreign college or university if the board determines that the educational requirements for the degree are equivalent to the requirements of this subpart. The applicant must obtain a subject analysis report from an education evaluation service approved by the board and submit the report to the board with the application for examination.

B. Qualifying experience:

(1) completion of a minimum of four years of qualifying experience in the geoscience discipline for which the applicant is seeking licensure if the applicant meets the education requirements of item A, subitem (1); or

(2) completion of a minimum of five years of qualifying experience in the geoscience discipline for which the applicant is seeking licensure if the applicant meets the education requirements of item A, subitem (2).

C. Qualifying geoscience experience gained before completion of one of the education requirements in item A must meet the following conditions:

(1) experience must be credited at a rate of 50 percent; and

(2) no credit for experience gained before completing:

(a) for geology, 20 semester or 30 quarter credits in geology, as specified in subpart 5, item A, subitem (2); or

(b) for soil science, eight semester or 12 quarter credits as specified in subpart 5, item B, subitem (2), and seven semester or 11 quarter credits as specified in subpart 5, item B, subitem (3).

D. Credit awarded under item C must not exceed two years of the required number of years of qualifying geoscience experience in this subpart.

E. One year of experience consists of full- or part-time employment that extends over a period of no less than 12 months and includes no fewer than 2,000 hours of performance of geoscience work described in subpart 6.

Subp. 4. [Repealed, 38 SR 59]

Subp. 5. **Approved geoscience education.** A curriculum approved by the board must meet the criteria in this subpart.

A. For an applicant seeking licensure as a professional geologist, the applicant shall present evidence of:

(1) a baccalaureate or higher degree from an accredited institution of higher learning; and

(2) a minimum of 30 semester or 45 quarter credits in geology divided among at least five of the following geology areas of study:

(a) physical geology;

(b) historical geology;

(c) stratigraphy;

(d) sedimentology or sedimentary petrology;

(e) mineralogy;

(f) igneous and/or metamorphic petrology;

(g) structural geology;

(h) hydrogeology;

(i) geochemistry;

(j) geophysics;

(k) glacial/quaternary geology;

(l) geomorphology;

(m) field geology or geologic field methods;

(n) medical geology;

(o) geostatistical database; and

(p) a combination of two or more of the areas of study in units (a) to (o), so long as they comprise 100 percent of the course content.

A maximum of nine semester credits or 12 quarter credits may be applied from any one area.

B. For applicants seeking licensure as a professional soil scientist, the applicant shall present evidence of meeting the criteria in subitems (1), (2), and (3);

(1) a baccalaureate or higher degree from an accredited institution of higher learning;

(2) a minimum of 16 semester or 24 quarter credits in soil science, including a minimum of two semester or three quarter credits in each of the following four core soil science areas of study:

(a) soil physical properties, soil biophysical environment, or soil water relations including:

i. soil physics;

ii. environmental biophysics;

iii. microclimatology;

iv. applied climatology;

v. soil mechanics; or

vi. soil irrigation or soil drainage;

(b) soil chemical properties or soil chemical processes including:

i. soil chemistry and mineralogy;

ii. soil clay mineralogy;

iii. soil fertility;

iv. plant nutrients in the environment;

v. micronutrients in agriculture; or

vi. sodic and saline soils;

(c) soil biological properties, soil biochemical process, environmental ecology, or soil microbial ecology including:

i. soil microbiology;

ii. soil biology;

iii. soil microbial ecology;

iv. soil fertility; or

v. environmental biophysics;

(d) soil genesis, soil classification, pedology, or soil morphology including:

i. soil geography;

ii. soil classification, genesis, or morphology;

iii. wetland soils; or

iv. field study of soils;

(3) a minimum of 14 semester or 21 quarter credits in soil science, closely related geoscience, environmental science that may interact with or impact soil, or investigatory methods used in the practice of geoscience including any of the following areas of study:

(a) soil science;

i. introduction to soil science; or

ii. any soil science area of study listed in item B, subitem (2);

(b) geology;

i. introduction to geology or introduction to physical geology; or

ii. any geology area of study listed in item A, subitem (2);

(c) soil or geology-based natural resource inventory;

(d) interaction of soil with solid, liquid, gaseous, or hazardous wastes;

(e) hydrology and water quality;

(f) remote sensing, aerial photo interpretation, or Geographic Information Systems (GIS) in natural resource systems; or

(g) use of and impacts to soil in agronomy, agricultural engineering, environmental science, forestry, or land use planning.

C. A maximum of three semester or five quarter credits of masters or doctorate degree thesis credits can be applied to the total number of credits.

D. Credits may only be applied to one required area of study.

Subp. 6. **Qualifying experience defined.** Qualifying experience for geology licensure must be obtained under the direct supervision of a licensed geologist. Qualifying experience for soil science licensure must be obtained under the direct supervision of a licensed soil scientist, licensed geologist, or licensed professional engineer who has qualified education and experience in the soil science discipline.

A. As used in this part, "qualifying experience" consists of varied, progressive, nonrepetitive, practical experience in the discipline of geoscience in which the applicant is seeking licensure that develops the applicant's ability to apply the knowledge gained during academic training to make sound judgments in completing geoscientific work and prepares the applicant to assume responsible charge of the work involved in the practice of the geoscience discipline in which the applicant is seeking licensure.

B. The experience must include elements of research and analysis, planning, specifications, codes and standards, economics, safety, observation of ongoing work, and inspection of the project.

C. Experience must be written in detail, verified by the applicant's supervisor, and submitted with the application for evaluation and approval by the board.

D. Qualifying experience must be acquired after graduation from a baccalaureate or higher degree curriculum that meets the requirements in subpart 5, except that continuous experience in periods of ten or more weeks gained before graduation shall be counted if gained as specified in subpart 3, item C.

Subp. 7. [Repealed, 38 SR 59]

Statutory Authority: *MS s 326.06*

History: *22 SR 90; 38 SR 59; 43 SR 89; 44 SR 987; 48 SR 505*

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