TITLE 16. BOARD FOR PROFESSIONAL ENGINEERS, LAND SURVEYORS AND GEOLOGISTS DEPARTMENT OF CONSUMER AFFAIRS

ORDER OF ADOPTION

Adopt California Code of Regulations, Title 16, Sections 3022, 3022.1 and 3022.2

Amend California Code of Regulations, Title 16, Section 3031.

ARTICLE 2. APPLICATIONS

§3022. Professional Geologist Educational and Experience Requirements

(a) To be eligible for the professional geologist license, an applicant shall have completed the educational requirements as set forth in either Section 7841(b)(1) or Section 7841(b)(2) of the Code and completed at least five years of professional geological experience, as set forth in Section 7841(c) of the Code. To be eligible for the geologist-in-training certificate, an applicant shall have completed the educational requirements as set forth in either Section 7841.2(c)(1) or Section 7841.2(c)(2) of the Code.

(1) As described in Section 7841(b)(1) of the Code and Section 7841.2(c)(1) of the Code, graduation from a college or university with a major in geological sciences or any other discipline relevant to geology refers to graduation with a baccalaureate degree or higher in geology or a related geological science from a program accredited by the Applied and Natural Science Accreditation Commission of ABET, Inc., the organization defined in Section 404(a) of Title 16, California Code of Regulations.

(2) As described in Section 7841(b)(2) of the Code and Section 7841.2(c)(2) of the Code, the requirement for successfully completing 30 semester hours or 45 quarter hours, in courses that, in the opinion of the Board, are relevant to geology, of which at least 24 semester hours or 36 quarter hours are upper division or graduate level, shall include the minimum coursework and concepts specified in subdivisions (A) and (B) below. Additional geologic coursework necessary to meet the total 30 semester hours or 45 quarter hours requirement specified in Section 7841(b)(2) and Section 7841.2(c)(2) of the Code may be selected at the applicant's discretion but shall be relevant to geology as defined in Section 7802 of the Code. This requirement shall be fulfilled at a college or university which, at the time the applicant was enrolled, was accredited by a national

or regional accrediting agency recognized by the United States Office of Education. "Life Experience Course Credit" is not acceptable.

(A) Core Geologic Concepts: Of the 30 semester hours or 45 quarter hours required by the Code, an applicant shall successfully complete a minimum of 15 semester hours or 22.5 quarter hours of core geological science courses in the following subject areas as specified:

(i) "Earth Materials" shall include a minimum of four semester hours or six quarter hours of instruction in the identification, classification, and chemistry of minerals and rocks; their formation; the interpretation of their origins; as well as their uses and importance.

(ii) "Structural Geology" shall include a minimum of three semester hours or four and one-half quarter hours of instruction in the description and analysis of structural features of rocks to reconstruct the motions and processes involved in the buildup and deformation of the Earth's crust from small to large scales. It shall also include the interpretation of brittle and ductile strain, the fundamentals of plate tectonics, and the analysis of local and regional geologic structure.

(iii) "Stratigraphy and Sedimentation" shall include a minimum of three semester hours or four and one-half quarter hours of instruction in the identification and interpretation of sedimentary rocks, sedimentary processes and structures, application of stratigraphic and dating methods, identifying the impact of climate and geologic processes on depositional patterns, and facies analysis.

(iv) "Upper-Division Field Geology" shall include a minimum of five semester hours or seven and one-half quarter hours of field training designed to demonstrate a progression of field investigation skills culminating in a final project or integrative field experience that is based on the knowledge and skills acquired in earlier geological science courses. This shall include instruction in the geological techniques or methods needed to measure, map, evaluate, and communicate geologic data; and the ability to plan and conduct geological investigations based upon existing sources of geologic information. This shall

include preparing and interpreting geologic maps, cross-sections, stratigraphic columns, and written reports. The field training may be obtained in one or more separate upper division field courses, but shall not be introductory in nature or be part of laboratory exercises for other geological science courses. Academic instruction in field methods such as geophysical techniques, logging trenches or borings, designing wells, and other common professional geologic tasks may serve as a component of the Upper-Division Field Geology requirement described in this section so long as it is part of an established field techniques course taught within a college or university geology or related geological sciences program.

(B) Applied Upper-Division Geology Coursework: Of the 24 semester hours or 36 quarter hours of upper division or graduate coursework required by the Code, an applicant shall successfully complete a minimum of six semester hours or nine quarter hours from a combination of at least two of the following subject areas.

(i) "Geomorphology" shall include instruction in the classification, origin, and analysis of landforms and watershed elements as well as the surface and tectonic processes that relate landforms to the underlying geologic materials. This shall include methods of geomorphic analysis and interpretation of different types of mapped data, including topographic, geologic, and remotely sensed data.

(ii) "Engineering Geology" shall include instruction in that branch of geology as defined in Section 3003(b) of Title 16, California Code of Regulations. This shall include instruction in those skills necessary to demonstrate knowledge and abilities as described in Section 3041(a)(2) of Title 16, California Code of Regulations.

(iii) "Hydrogeology" shall include instruction in that branch of geology as defined in Section 3003(h) of Title 16, California Code of Regulations. This shall include instruction in those skills necessary to demonstrate knowledge and abilities as described in Section 3042(b)(2) of Title 16, California Code of Regulations.

(iv) "California Geology" shall include the instruction necessary to demonstrate knowledge of the seismicity and geology unique to the State of California, and the state laws, rules and regulations unique to the practice of geology in this state as described in Section 7841(d) of the Code.

(v) "Paleontology" shall include instruction necessary to recognize common fossils and fossil types, the geologic settings that would indicate the potential for paleontological resources, and the evolutionary history of fossil groups of traditional importance to geologists. Other topics may include basic modes of preservation, skeletal anatomy, systematics and taxonomy, biostratigraphy, paleoecology, and paleobiogeography.

(vi) "Resources Geology" shall include the instruction needed to identify the origin, occurrence, and distribution of non-renewable resources, including metallic, nonmetallic, and energy-producing materials; problems related to resource extraction; estimations and limitations of reserves; and reclaiming sites after extraction of resources.

(vii) "Environmental Geology" shall include an introduction to concepts involved in environmental site assessment and remediation, environmental geochemistry, and the mitigation of potentially negative effects of human activities such as exploration for mineral and energy resources, or solid and hazardous waste disposal on geologic systems, as well as the protection of water resources, land and watershed restoration.

(viii) "Geophysics" shall include instruction in that branch of geology defined in Section 7802.1 of the Code and Section 3003(e) of Title 16, California Code of Regulations.

(ix) "Technology Applications in Geology" encompasses a wide range of technology related instruction that includes an emphasis on applications to geologic investigations. These subjects may include, but are not limited to, instruction in the use of Geographic Information Systems (GIS), computer modeling of groundwater flow or other geologic processes, signal processing or numerical methods of data analysis. Instruction without a specific and

demonstrable geologic application will not qualify. A maximum of three semester hours or four and one-half quarter hours would be accepted in this subject area.

(x) "Applied geoscience topics taught by a college or university department other than a geology or related geological sciences department" refers to instruction in subject areas with a reasonable and rational application to the professional practice of geology. These courses are limited to the topics of geological engineering, geotechnical engineering, mining engineering, petroleum engineering, soil science, engineering soil mechanics, or hydrology. A maximum of three semester hours or four and one-half quarter hours taught in a college or university department other than a geology or related geological sciences department would be accepted in this subject area.

(3) Independent study, research projects, theses, or dissertations may be used to satisfy the upper-division coursework requirements defined in subdivisions (A) or (B) if it can be documented as meeting the requirements of one or more of the courses specified in subdivisions (A) or (B) above. Courses that combine subjects or skill sets that can be documented as meeting the requirements described in subdivisions (A) or (B) above may be accepted.

(4) Workshops, professional development seminars, conferences, non-credit certificate programs, student internships, or reading courses may not be used to satisfy the requirements described in Section 3022(a)(2) of Title 16, California Code of Regulations. For the purposes of this section, a reading course is defined as a course not normally offered as part of the curriculum that is conducted as a tutorial or remedial course.

(5) It shall be the applicant's responsibility to demonstrate that his or her academic instruction meets the requirements of the Board. The applicant shall provide official sealed transcripts, and any other reasonable and necessary supporting evidence, when requested by the Board, to document successful completion of all educational requirements.

(b) Professional geological experience for licensure as a geologist is that experience that has been gained while performing professional geologic tasks under the responsible charge of a person who in the opinion of the Board has the training and experience to have responsible charge of geological work.

(1) For the purposes of this section, a person will be deemed to have the training and experience to have responsible charge of geological work if they meet any one of the following:

(A) holds licensure as a Professional Geologist;

(B) holds licensure as a Professional Geophysicist;

(C) is licensed as a Civil Engineer or a Petroleum Engineer practicing geology within the exemption described in Section 7838 of the Code and who presents to the Board documented evidence that the reference has the training and experience in the area of geology in which the applicant's experience is earned sufficient to qualify the reference to have responsible charge of geologic work; or

(D) is legally authorized to practice geology in a situation or locale where the reference is not required to be licensed and who presents to the Board documented evidence that the reference has the training and experience in the area of geology in which the applicant's experience is earned sufficient to qualify the reference to have responsible charge of geological work.

(2) Professional geological experience shall be computed on an actual time worked basis not to exceed 40 hours per week.

(3) An applicant for licensure as a professional geologist shall be granted credit for professional geological experience, up to a combined maximum of three years, for the following education:

(A) A maximum of two years professional geological experience credit for graduation with a baccalaureate degree in geology or a related geological science, from a program accredited by the Applied and Natural Science Accreditation Commission of ABET, Inc. as described in Section 3022(a)(1) of Title 16, California Code of Regulations, or for the completion of the 30 semester hours or 45 quarter hours of geological sciences courses as described in Section 3022(a)(2) of Title 16, California Code of Regulations.

(B) One year of professional geological experience credit for one year of graduate study or research in the geologic sciences. One year of graduate study or research is defined as a 12 calendar month period during which the candidate is enrolled in a full-time program of graduate study or research. Full-time graduate study is defined as two semesters per year of eight semester hours each (12 quarter hours), or as defined by the college or university, whichever is less.

(C) Part-time graduate study or research, and part-time professional geological work experience will be prorated and combined on a 12 calendar month basis. No credit will be given for professional geological work experience performed during the same time period when full-time graduate study or research is being done for which educational credit is being allowed.

(4) An applicant shall not be eligible to earn credit for professional geological experience as defined in Section 7841(c) of the Code until the applicant has completed the educational requirements set forth in Section 7841(b) of the Code.

Note: Authority cited: Section 7818, Business and Professions Code. Reference: Sections 7841, 7841.2, and 7842, Business and Professions Code.

§3022.1 Professional Geophysicist Educational and Experience Requirements

(a) To be eligible for the professional geophysicist license, an applicant shall have completed the educational requirements set forth in Section 7841.1(b) of the Code, and at least seven years of professional geophysical work, as set forth in Section 7841.1(c) of the Code.

(1) An applicant for licensure as a professional geophysicist will be granted credit towards the educational requirements, as specified in Section 7841.1(b) of the Code, fulfilled at a college or university which, at the time the applicant was enrolled, was accredited by a national or regional accrediting agency recognized by the United States Office of Education. "Life Experience Course Credit" is not acceptable to satisfy the requirements of Section 7841.1(b) of the Code.

(b) Professional geophysical work for geophysics licensure is that experience that has been gained while performing professional geophysical work under the responsible charge of a licensed Professional Geophysicist, or in responsible charge of professional geophysical work, as specified in Section 7841.1(c) of the Code.

(1) Professional geophysical work shall be computed on an actual time worked basis not to exceed 40 hours per week.

(2) An applicant for licensure as a professional geophysicist shall be granted credit for professional geophysical work, up to a combined maximum of four years, for the following education:

(A) One-half year of work credit for each year of full time undergraduate study in the geophysical sciences up to a maximum of two years. A year of undergraduate study or research is defined as a 12 calendar month period during which the candidate is enrolled in a full-time undergraduate program as defined by the college or university.

(B) One year of work credit for one year of graduate study or research in the geophysical sciences. A year of graduate study or research is defined as a 12 calendar month period during which the candidate is enrolled in a full-time program of graduate study or research. Full-time graduate study is defined as two semesters per year of eight semester hours each (12 quarter hours), or as defined by the college or university, whichever is less.

(C) Part-time graduate study or research, and part-time professional geophysical work experience will be prorated and combined on a 12 calendar month basis. No credit will be given for professional geophysical work experience performed during the same time period when full-time graduate study or research is being done for which educational credit is being allowed.

(3) An applicant shall not be eligible to earn credit for professional geophysical work performed under the supervision of a Professional Geophysicist until the applicant has completed the educational requirements set forth in subdivision (b) of Section 7841.1 of the Code.

Note: Authority cited: Section 7818, Business and Professions Code. Reference: Section 7841.1 and 7842.1, Business and Professions Code.

§3022.2 Reference Requirements: Professional Geologist and Professional Geophysicist

(a) To assist the Board in evaluating an applicant's qualifications, each applicant for licensure as a professional geologist or as a professional geophysicist shall submit documentation from a minimum of three references who, in the opinion of the Board, have the training and experience to have responsible charge of geological work as defined in Section 3022(b)(1) of Title 16, California Code of Regulations or geophysical work as defined in Section 3022.1(b) of Title 16, California Code of Regulations, respectively.

(1) None of the references can be related to the applicant by blood, marriage, registration as domestic partners, or adoption.

(2) Documentation submitted to the Board by a reference shall be the original copy with an original signature and seal on every page of the documentation submitted. Photocopies, scanned copies, and electronic signatures are not acceptable.

(3) The documentation shall include the following information:

(A) The reference shall state that they have personal knowledge of the applicant's qualifying experience in a responsible position as defined in Section 3003(c) of Title 16, California Code of Regulations and shall clearly indicate the nature of their relationship with the applicant;

(B) The reference shall clearly indicate the number of months they can qualify the applicant as having completed professional geological work as defined in Section 3003(d) of Title 16, California Code of Regulations or professional geophysical work as defined in Section 3003(e) of Title 16, California Code of Regulations;

(C) The reference shall document how they computed the number of months of qualifying work experience using the definition of full time work provided in Sections 3022(b)(2) of Title 16, California Code of Regulations and 3022.1(b)(1) of Title 16, California Code of Regulations;

(D) The reference shall provide a detailed, complete, and accurate description of the qualifying professional geologic experience or professional geophysical work completed by the applicant;

(E) The work experience description shall cover the time period being documented as qualifying experience by the reference;

(F) The reference shall use the appropriate scientific terms in describing the work, while avoiding colloquialisms, industry jargon, and slang; and,

(G) The reference shall include the following statement:

"I certify under penalty of perjury that these statements are true and correct to the best of my knowledge."

(4) Nothing contained in this section shall limit the authority of the Board to require that an applicant submit additional references, employment verifications, or any other information pertinent to the applicant's education and/or experience to verify that the applicant meets the minimum qualifications for a professional geologist license as defined in Section 7841 of the Code,

or the minimum qualifications for a professional geophysicist license as defined in Section 7841.1 of the Code.

Note: Authority cited: Section 7818, Business and Professions Code. Reference: Sections 7841 and 7841.1, Business and Professions Code.

ARTICLE 3. EXAMINATIONS

§3031 ~~Examination Required.~~ Examination Credit: Professional Geologist, Professional Geophysicist and Specialty Certification.

~~(a) Every applicant for registration as a geologist shall be required to take and pass examinations as provided in Section 7841(d) of the code or every applicant for registration as a geophysicist, or every applicant for certification in any specialty, shall be required to take and pass an examination as prescribed by the board except as provided in Section 7847 of the code.~~

~~(b) To be eligible for the geological examination, an applicant shall have completed at least five years of educational and work experience in professional geological work, as set forth in subdivisions (b) and (c) of Section 7841 of the code.~~

~~(1) Graduate study or research in geological sciences at a school or university whose geological curricula meet criteria established by rules of the board, shall be counted on a year for year basis in computing the experience requirements specified in Section 7841 of the code. A year of graduate study or research is defined as being a 12 calendar month period during which the candidate is enrolled in a full-time program of graduate study or research. Shorter periods will be prorated.~~

~~(2) An applicant shall not be eligible to earn credit for professional geological work performed under the supervision of a professional geologist or registered civil or petroleum engineer until the applicant has completed the educational requirements set forth in subdivision (b) of Section 7841 of the code.~~

~~(3) In no case will credit be given for professional geological work experience performed during the same time period when full-time graduate study or research is being done for which educational experience credit is being allowed. Part-time graduate study or research and~~

~~part-time professional geological work experience will be prorated and combined on a 12 calendar month basis.~~

~~(c) To be eligible for the geophysical examination, an applicant shall have completed at least seven years of educational and work experience in professional geophysical work, as set forth in subdivisions (b) and (c) of Section 7841.1 of the code.~~

~~(1) Graduate study or research in geophysical related sciences at a school or university whose geophysical curricula meet criteria established by rules of the board, shall be counted on a year-for-year basis in computing the experience requirements specified in Section 7841.1 of the code. A year of graduate study or research is defined as being a 12 calendar month period during which the candidate is enrolled in a full-time program of graduate study or research. Shorter periods will be prorated.~~

~~(2) An applicant shall not be eligible to earn credit for professional geophysical work performed under the supervision of a professional geophysicist until the applicant has completed the educational requirements set forth in subdivision (b) of Section 7841.1 of the code.~~

~~(3) In no case will credit be given for professional geophysical work experience performed during the same time period when full time graduate study or research is being done for which educational experience credit is being allowed. Part-time graduate study or research and part-time professional geophysical work experience will be prorated and combined on a 12 calendar month basis.~~

~~(d) Every applicant for registration as a geologist who obtains a passing score determined by a recognized criterion-referenced method of establishing the pass point in the California examination shall be deemed to have passed the California examination. Such a passing score may vary moderately with changes in test composition. This subsection shall become effective on December 1, 1998, and shall be repealed on December 31, 1999.~~

~~(e)~~ (a) Each applicant for ~~registration~~ licensure as a geologist who obtains a passing score on the Fundamentals of Geology and Practice of Geology examinations created by the National Association of State Boards of Geology on or after November 1, 1996 and obtains a passing score as determined by a recognized criterion-referenced method of establishing the pass point in the California specific examination pursuant to Section 7841(d) of the Code shall be deemed to have

passed the required examinations for licensure as a professional geologist in California. ~~This subsection shall become effective on January 1, 2000.~~

(1) Candidates shall receive credit for obtaining a passing score on the Fundamentals of Geology examination, the Practice of Geology examination, and the California specific examination and shall be required to submit an application to retake and pass only those examinations previously failed.

~~(f)~~ (b) Every applicant for ~~registration~~ licensure as a geophysicist or for certification in any specialty, who obtains a passing score determined by a recognized criterion-reference method of establishing the pass point in the California examination shall be deemed to have passed the California examination. Such a passing score may vary moderately with changes in test composition.

Note: Authority cited: Section 7818, Business and Professions Code. Reference: Sections 7841 ~~and~~, 7841.1, 7841.2, 7842 and 7842.1, Business and Professions Code.