

Development Engineer

University of California, Los Angeles
May, 1972

Class Specifications - E.20

Principal Development Engineer - 7180
Senior Development Engineer - 7181
Associate Development Engineer - 7182
Assistant Development Engineer - 7183
Junior Development Engineer - 7184

SERIES CONCEPT

The Development Engineer performs and/or supervises the performance of design engineering for laboratory and experimental facilities, equipment, and instrument systems; supervises and/or coordinates the construction, assembly and testing of laboratory and experimental facilities, equipment, and instrument systems; and performs other related duties as required.

Positions in this series are characterized by the application of theoretical and/or mathematical approaches in determining the feasibility of engineering designs with consideration of such factors as system effectiveness, reliability, configuration, and cost.

Incumbents typically are assigned responsibility for the coordination of the engineering aspects of research projects involving the design, construction, assembly, and test of experimental equipment and instrument systems; provide professional engineering information and advice to principal investigators and/or other faculty and research personnel with administrative responsibility for the research program or teaching facility; act as engineering liaison officer in relationships with investigators, shop personnel, vendors, and extramural funding agencies; design or supervise the design of electrical, mechanical, electronic, and/or optical instruments and of computer-associated systems and equipment; supervise or perform the recording and reduction of test data for instrument design and evaluation purposes; and assemble and evaluate information and prepare reports with respect to feasibility, engineering design criteria, and performance of instrument systems.

The development engineering series includes electrical, electronic, mechanical, and industrial engineering specialties. The fields of application include the physical sciences, engineering, oceanography, biological sciences and medicine, and newly emerging interdisciplinary teaching and research efforts. Other branches of engineering and fields of application may be included, when equivalent technical knowledges and skills are required or are recognized as distinct occupations.

CLASS CONCEPTS

Principal Development Engineer

Under general direction, incumbents are responsible to a principal investigator or research facility administrator for planning, organizing, and supervising the work of professional engineering and support staffs engaged in design, construction, and test of laboratory facilities, equipment and Instrument systems; represent the officer or researcher to whom they are responsible at meetings and conferences involving campus, University, and extramural funding agency levels of authority in matters related to engineering design considerations and financial requirements dependent on engineering design considerations; and carry major responsibility for accomplishment of research objectives in relationships with investigators, manufacturers, contractors, and University staff members, as a principal assistant to the faculty investigator or research administrator in charge.

Examples of assignments allocated to this level of difficulty and responsibility are:

Supervisor of the professional engineering and technical support staff of a research and development laboratory facility, providing biomedical engineering services to teaching and research units in the health sciences, with responsibility for all engineering specialties engaged, activities of technical and shop personnel, and successful fiscal management of the enterprise.

Supervisor of the professional engineering and technical support staff of an environmental physiology research laboratory facility, providing engineering services for biological experiments involving major investments in airborne bioinstrumentation systems, with responsibility for all engineering specialties engaged, activities of technical and shop personnel, negotiation and monitoring of contracted services, coordination of scheduling commitments with experimental objectives and technical design criteria, and successful fiscal management.

Supervisor of the professional engineering and technical support staff of a marine physical research laboratory facility, providing engineering services for major research projects in the field of underwater communications, with responsibility for all engineering specialties engaged, activities of technical and shop personnel, negotiation and monitoring of contracted services, coordination of scheduling commitments with experimental objectives and technical design criteria, and successful technical achievements within time and financial constraints.

Principal level assignments typically carry engineering management responsibility covering all engineering specialties engaged, which necessitates the effective integration of all sub-systems and engineering fields, such as mechanical, electrical, and electronic. The professional engineering staff supervised typically includes three or more Development Engineers, including one or more at the Associate level.

Senior Development Engineer

Under direction, incumbents assist a campus or research facility administrator, principal investigator, or Principal Development Engineer, in planning, organizing, supervising, and/or performing the work of a professional engineering staff engaged in a specialized engineering phase of a teaching and/or research program; represent the officer to whom they are responsible at meetings and conferences involving campus, University, and extramural funding agency levels of authority in matters related to engineering design considerations and financial requirements dependent on engineering design considerations; and carry major responsibility for

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accomplishment of research objectives in relationships with investigators, manufacturers, contractors and University staff members, as a senior assistant to the Principal Development Engineer or faculty investigator in charge.

Examples of assignments allocated to this level of difficulty and responsibility are:

Supervisor of one of the engineering specialty functions (electrical, electronic, mechanical, or industrial) of the engineering staff of a major research program, in which two or more engineering specialties are required and recognized.

Supervisor of the professional engineering and technical support staff of a teaching and/or research facility, providing engineering services to faculty members and investigators, with responsibility for the engineering specialty engaged, activities of technical and shop personnel, and successful technical achievements within time and financial constraints.

Specialist, advisor, and consultant on engineering design problems in a highly specialized field of application, with responsibility for planning and designing large and/or novel engineering systems, instrumentation systems or computer-related systems.

Senior level assignments typically carry responsibility for the supervision of Associate, Assistant, and/or Junior Development Engineers, as well as technical and shop personnel involved in the construction, assembly and test of equipment and instruments. Non-supervisory assignments at the senior level are reserved for specialists, who are widely recognized and consulted by University staff members for their expert knowledge of an engineering specialty field and/or field of application. The criterion for allocation of a non-supervisory assignment to the senior level may be met by one of the following:

1. Successful application of technical knowledges and skills in an engineering specialty field to a variety of research efforts, involving the integration of substantial scientific subject matter knowledge and engineering expertise.
2. Successful application of technical knowledges and skills in more than one engineering specialty field to a highly specialized field of application, involving the integration of substantial scientific subject matter knowledge and engineering expertise.

Associate Development Engineer

Under direction, incumbents perform all or many of the duties indicated for the series under the Series Concept. This is the full professional level at which incumbents are expected to operate rather independently in a specialized engineering phase of a major teaching and/or research effort. Supervision over such positions is usually exercised by a Senior or Principal Development Engineer, or by a faculty investigator.

Examples of assignments allocated to this level of difficulty and responsibility are:

Design engineer (electrical, electronic, or mechanical) for an instrumentation system required in support of a major research effort involving substantial investments in staff time and equipment, with responsibility for engineering liaison and coordination through construction, assembly, and test.

Design engineer (electrical, electronic, or mechanical) and supervisor of a technical support staff of a teaching and/or research laboratory facility, providing engineering services to faculty members and

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investigators, with responsibility for the engineering specialty engaged, activities of technical and shop personnel, and successful technical achievements within time and financial constraints.

Associate level assignments typically carry responsibility for supervision and/or coordination of technical and shop personnel involved in drafting, construction, assembly, and test of experimental equipment. These assignments typically do not carry responsibility for supervision of other professional engineers, although this kind of responsibility is not precluded in a training and development assignment leading to a Senior level position. Associate level assignments typically require concentration in a scientific field of application where scientific subject matter knowledge relevant to research objectives and methodology is of great value in understanding and establishing engineering design criteria. This kind of knowledge of the field of application is usually attained through several years of experience as a Junior and/or Assistant Development Engineer in the specific field of application.

The examples cited above are typical for teaching and/or research laboratory facilities. Other kinds of professional engineering endeavor may be recognized at the Associate level, when they involve comparable technical skills and knowledges in such applications as engineering systems analysis, engineering feasibility analysis, and operations research.

Assistant Development Engineer

Under general supervision, incumbents design and prepare engineering plans and specifications for novel laboratory equipment and instruments; coordinate construction, assembly, and laboratory and field testing of equipment and instruments; and participate in the engineering and mathematical analysis of experimental data or in the mathematical solution of physical and engineering problems. Assignments at this level are expected to be of moderate difficulty and responsibility, with work subject to checking and review by a licensed engineer or other professional engineer of comparable qualifications.

Incumbents typically are expected to progress to the class of Associate Development Engineer.

Junior Development Engineer

Under supervision, incumbents perform entry level professional engineering work. Incumbents make design calculations and cost of material estimates; assemble and calibrate laboratory equipment and instruments; set up a variety of test samples and run routine tests; collect and reduce experimental data and analyze results of tests using engineering principles and mathematical techniques; participate in preparation of technical reports; and demonstrate engineering laboratory techniques and procedures to new technical staff members and/or graduate students.

This is the entry-level class for graduates in engineering. Assignments are structured to provide training experience under supervision of a licensed engineer or other professional engineer of comparable qualifications. Incumbents typically are expected to progress to the class of Assistant Development Engineer.

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MINIMUM QUALIFICATIONS

Principal Development Engineer

Graduation from college with major work in engineering and six years of engineering experience in the planning, development, and construction of engineering systems including three years of specialized design work; or an equivalent combination of additional education and experience.

Senior Development Engineer

Graduation from college with major work in engineering and five years, of engineering experience in the planning, development, and construction of engineering systems, including two years in specialized design work; or an equivalent combination of additional education and experience.

Associate Development Engineer

Graduation from college with major work in engineering and three years of engineering experience, including one year of responsible design work; or an equivalent combination of additional education and experience.

Assistant Development Engineer

Graduation from college with major work in engineering and two years of engineering experience; or an equivalent combination of additional education and experience.

Junior Development Engineer

Graduation from college with major work in engineering.

Note: In all of the above qualification standards, a California professional engineering license may be substituted for the B.S. degree in engineering. A B.S. or higher degree in physics may be substituted for the B.S. degree in engineering.